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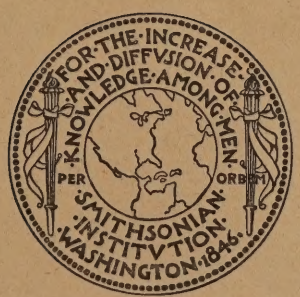
# THE TAJIN TOTONAC

## PART 1. HISTORY, SUBSISTENCE, SHELTER AND TECHNOLOGY

*by*

ISABEL KELLY
*and*
ANGEL PALERM

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ISABEL KELLY
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ANGEL PALERM

*Prepared in Cooperation With the United States Department of State as a Project of the Interdepartmental Committee on Scientific and Cultural Cooperation*

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## LETTER OF TRANSMITTAL

SMITHSONIAN INSTITUTION,
INSTITUTE OF SOCIAL ANTHROPOLOGY,
*Washington 25, D. C., June 16, 1950.*

SIR: I have the honor to transmit herewith a manuscript entitled "The Tajín Totonac: Part 1. History, Subsistence, Shelter, and Technology," by Isabel Kelly and Angel Palerm, and to recommend that it be published as Publication Number 13 of the Institute of Social Anthropology.

Very respectfully yours,

GORDON R. WILLEY, *Acting Director.*

DR. ALEXANDER WETMORE,
*Secretary of the Smithsonian Institution.*

## PUBLICATIONS OF THE INSTITUTE OF SOCIAL ANTHROPOLOGY

1. Houses and House Use of the Sierra Tarascans, by Ralph L. Beals, Pedro Carrasco, and Thomas McCorkle. x+37 pp., 8 pls., 20 figs. 1944.
2. Cherán: A Sierra Tarascan Village, by Ralph L. Beals. x+225 pp., 8 pls., 19 figs., 5 maps. 1946.
3. Moche: A Peruvian Coastal Community, by John Gillin. vii+166 pp., 26 pls., 8 figs., 1 map. 1947.
4. Cultural and Historical Geography of Southwest Guatemala, by Felix Webster McBryde. xv+184 pp., 47 pls., 2 figs., 25 maps. 1947.
5. Highland Communities of Central Peru, by Harry Tschopik, Jr. viii+56 pp., 16 pls., 2 maps. 1947.
6. Empire's Children: The People of Tzintzuntzan, by George M. Foster, assisted by Gabriel Ospina. v+297 pp., 16 pls., 36 figs., 2 maps. 1948.
7. Cultural Geography of the Modern Tarascan Area, by Robert C. West. vi+77 pp., 14 pls., 6 figs., 21 maps. 1948.
8. Sierra Popoluca Speech, by Mary L. Foster and George M. Foster. iii+45 pp. 1948
9. The Terena and the Caduveo of Southern Mato Grosso, Brazil, by Kalervo Oberg. iv+72 pp., 24 pls., 2 charts, 4 maps. 1949.
10. Nomads of the Long Bow: The Siriono of Eastern Bolivia, by Allan R. Holmberg. iv+104 pp., 7 pls., 4 charts, 1 map. 1950.
11. Quiroga: A Mexican Municipio, by Donald D. Brand. v+242 pp., 35 pls., 4 maps. 1951.
12. Cruz das Almas: A Brazilian Village, by Donald Pierson. x+226 pp., 20 pls., 13 figs., 2 maps. 1951.

**DEDICATED TO THE MEMORY OF**
**BERTHA B. HARRIS**

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BERTHA B. HARRIS

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# PREFACE

Since 1944, the Institute of Social Anthropology, of the Smithsonian Institution, has been engaged in a program of active collaboration with the Escuela Nacional de Antropología e Historia, which is a branch of México's Instituto Nacional de Antropología e Historia. The scientific aims of this cooperative project are twofold: to train students of the Escuela, both in the classroom and in the field; and to add to our knowledge of the native and rural populations of Mexico.

As a result of joint endeavors in the field, three papers have appeared in the present series: Foster's monograph on the Tarascan-mestizo town of Tzintzuntzan, West's Tarascan geography, and Brand's study of Quiroga. Newman's Nahuatl and Otomí linguistic investigations still are mostly unpublished.

With the exception of the latter, all joint field work prior to 1947 was confined to the Tarascan area of Michoacán. In recent years, other individuals and institutions have concentrated on the Tarascan zone, with the result that knowledge of this area is comparatively full, at least in contrast to other parts of Mexico. Under the circumstances, it seemed both expedient and humane to relieve the long-suffering Tarascans from the pressure of a protracted open season; and, in 1947, with the concurrence of the Escuela, it was decided to shift the scene of field activities from highland Michoacán to the Gulf coast of Mexico, in the vicinity of Papantla, in the State of Veracruz.

This area had much to commend it. In the first place, it was the seat of the lowland Totonac, an important ethnic group whose culture was little known, except from mention in the early sources and from a scattering of more recent reports, chiefly by chance travelers.[1] In the second place, until a few years before, Papantla had been relatively inaccessible by modern routes of travel, and this comparative isolation might have made possible cultural survivals. In the third place, a new paved highway now connected Papantla with Mexico City, thus eliminating major problems of transport.

In January of 1947, a preliminary trip was made to Papantla, to decide upon specific headquarters. After considerable local inquiry and a brief inspection of several outlying Totonac communities, it was decided that the little settlement of Tajín was most promising. It was sufficiently far from Papantla—1.5 hours by horse or by foot, over a pretty poor trail—to be immune from noticeable urban taint; yet it was sufficiently close to permit easy communication. Its size—greatly underestimated both by informants and by the 1940 Federal census—seemed to promise the possibility of first-hand contact with most of the population.

But the deciding factor was that Tajín was the seat of the famous archeological site of that name. There, for many years, the Instituto Nacional de Antropología had maintained a Totonac caretaker and, from time to time, had undertaken excavations of major proportions. Accordingly, we assumed that the local population would not be unduly alarmed by a group of students which arrived under the aegis of the Instituto; and the caretaker, long accustomed to note-taking and to queries, might be able to explain our activities in innocuous terms to his neighbors. Moreover, with great amiability, the archeologist in charge of the zone, Ing. José García Payón, indicated his willingness to have the caretaker released to us, to serve as informant and local sponsor. With equal amiability, Arq. Ignacio Marquina, director of the Instituto, made the official arrangements necessary for this temporary transfer.

Early in February of 1947, we moved to Tajín, where we remained 4 months; and in 1948, we returned, again to remain from February through May. Unfortunately, our visits have been confined principally to the spring season—the most practical months, owing to the school calendar and to the excessive humidity which hampers foot travel during much of the year in the Papantla

[1] There are two modern reports on the Totonac, neither based on field work: Melgarejo (1943), and Krickeberg. The latter study is confined largely to an inspection of archeological and historical material.

zone. However, brief return visits, of a few days only, were made in the fall of 1948 and in the summer and fall of 1949.

During both seasons, we lived in a two-room bamboo house, which ordinarily is part of the ménage of Lorenzo Xochigua, but which, for the time being, was unoccupied by his family. The house was centrally situated, just off the main plaza, and on one of the chief trails to Papantla (map 7, house *a*, lot No. 29). Once settled, we slowly became acquainted with our neighbors, and, little by little, our circle of friends was expanded until, by the end of the second season, we probably had visited and were acquainted personally with at least half of the local population. Only 35 households cluster about the plaza, and most of the families live in scattered house groups, some as much as 3 hours on foot from our base.

In 1947, three students participated. Gabriel Ospina came as volunteer assistant and remained a month, until he returned to Bogotá, Colombia. His assistance during the first few weeks of adjustment was extremely helpful, and the original forms of our census were largely the result of his labors. José Luis Lorenzo likewise remained approximately a month, when he returned to Mexico City because of ill health. María Cristina Alvarez worked the entire season, returning in 1948, to be with us during the month of February. Roberto Williams García and Angel Palerm remained the full 4 months of 1948, and Florencia Muller joined us for about 10 days that spring. The report is based on the pooled information of all participants. Each student has made concrete contributions to our general fund of knowledge, of which the most outstanding are those of Miss Alvarez and Mr. Palerm.

As my guest during Holy Week of both 1947 and 1948, Bertha Harris likewise collaborated actively in the field, and later, bore with me during the writing of the greater part of the report. Her untimely death is mourned not only by us but by all academic circles in Mexico. The present study is dedicated to her, as a friend, as a distinguished librarian with a wide range of interests, and as an outstanding figure in the field of cultural relations between the United States and Mexico.

Following the 1947 season, Miss Alvarez assisted in clerical work in the Federal census office during many weeks, gathering the data on which map 2 is based. At the conclusion of the 1948 season, Mr. Palerm, the junior author, collaborated in the preparation of the report. The discussion of sixteenth-century distribution and population (pp. 3–12) is largely his. Moreover, he is responsible for the long chapters on history, from the Discovery through the Colonial period (pp. 24–46), and I have done little more than edit and translate this section. Mr. Palerm also has prepared the first drafts of table 1 and of maps 1 to 4, 7, and 10 to 18. Map 7 was one of his field undertakings; map 9, we prepared jointly.

We also have worked jointly on the problem of the Mexican conquests. Both of us read the source material, following which I wrote the running accounts which appear in the main text and in Appendix B, while Mr. Palerm embarked on the long and onerous chore of attempting to identify the conquests, pueblo by pueblo. When this task was completed, the textual accounts were checked against the lists and the maps, and the necessary changes made. The original versions of the chronological tables which appear in Appendix B were prepared by me, limiting entries to those pueblos which appear definitely in the sources as dated conquests. Later, Mr. Palerm revised them, checking my data and adding cases which appeared dubious in a given source, but whose conquest was confirmed by other evidence. In large part, therefore, these tables are his work; the maps of Appendix B are exclusively his, as are many of the notes which accompany them. Last, but not least, Mr. Palerm has taken the responsibility of checking bibliographical citations.

From time to time, Rafael Segovia and Hernán Porras, both students at the Escuela, have volunteered assistance in the clerical work involved in the analysis of our census data.

In addition to the above participants, we are under obligation to several institutions and to many friends and colleagues. Particular thanks go to both supporting institutions: the Institute of Social Anthropology, of the Smithsonian Institution; and the Escuela Nacional de Antropología e Historia, of the Instituto Nacional de Antropología e Historia. Of the first, Dr. George Foster and Miss Lois Northcott have been our towers of strength; of the second, Dr. Pablo Martínez del Río, Arq. Ignacio Marquina, Dr. Daniel F. Rubín de la Borbolla, and Ing. José García Payón. Dur-

ing the 1947 season, the State of Veracruz contributed $500.00 pesos, to defray costs of photography and of horse transportation; it likewise paid the living expenses in the field of Miss Alvarez, who, at that time, held a State scholarship.

Through the kindness of Petróleos Mexicanos, and especially of Ing. Manuel Alvarez, Jr., and of Ing. Salvador Alvarez Cabañas, we were permitted to use large-scale land maps of the Tajín zone. Don Rafael de la Fuente, of Papantla, also loaned a useful local map, and the Oficina de Hacienda, in Papantla, generously permitted inspection of its land records. In Mexico City, the Dirección General de Estadística suffered us underfoot literally for months; to its staff, particularly Don Enrique Miranda, we are much indebted. Prof. José Luis Melgarejo, of Jalapa, generously provided letters of introduction to several of his friends in Papantla. My aide of many years, Don José María Corona, served as camp manager and cook during both seasons; without his ministrations, we should have been far less comfortable in the field. In his spare time, he worked informally as investigator and accumulated useful information which was added to our general fund of knowledge.

On the score of professional assistance, our obligations are many. Dr. Edgar Anderson has examined maize specimens; Dr. Hugh Cutler, beans and cucurbits; Dr. J. B. Hutchinson, cotton; Dr. Charles Heiser, Jr., chili. A number of the 1948 herbarium specimens were identified by Prof. Maximino Martínez, but for most of the determination of both seasons, we are indebted to Dr. Harold Emery Moore, Jr. Mr. William E. Stone generously took charge of the fumigation and drying of both crop and herbarium specimens. To the staff of the local Rockefeller Foundation office, and particularly to Dr. Dorothy Parker, we are indebted for assistance and advice on several matters connected with agriculture and diet. During a recent visit to Mexico, Dr. Carl Sauer not only took time to study our catalog of Tajín plants, but also read parts of the agricultural section of the manuscript. The chapter on diet has been read by Dr. Robert S. Harris; that on legendary history, by Mr. Robert Barlow and Prof. Wigberto Jiménez Moreno.

Water-supply problems were discussed with Mr. Richard Greeley. Dr. Starker Leopold has suggested identification of a series of local birds, on the basis of descriptions provided by informants; and Mr. Milton J. Lindner has provided identification of a number of fish and crustaceans.

For photographs, we are indebted to Don Gabriel Ospina for plates 3, *a–d*, 4 *b*, *c*, *e*, 9, *c*, *d*, 16, *b*, *e*, 18, *b*, *d*, and 25, *e*, *g;* to Miss Bertha Harris, for plates 8, *b*, *c*, *f*, 11, *g*, 16, *a*, *f*, 18, *a*, 19, *b*, and 20, *d;* and to Mr. George Smisor, for plate 1, *a*. The photographs of plate 29 were taken by the staff of the local Microfilm Laboratory of the Library of Congress. Sketches of embroidery motifs shown in figures 63 to 67 have been loaned by Don Mateo Saldaña, who also drew most of the maps and text figures; some, however, are by Don Félix Díaz and Don Román Piña Chan.

Last, but not least, thanks go to our many friends in Tajín. Our greatest debt is to Don Modesto González, caretaker of the archeological site for close to 30 years, and our chief informant during both seasons. In addition, particular thanks are due Ana Méndez, María Loreto, Mercedes Morales, Elena A. de Xochigua, Santiago Simbrón, Juan Castro, Nemesio Martínez, Agapito Pérez, Cecilio Ramírez, Pablo González, Rutilio Olmos, Magdaleno and Zenón Méndez, Tirso González, Lorenzo Xochigua, Donato Santes, Francisco Villanueva, Antonio Bautista, and Manuel de la Luz.

These friends, and many others, have given us a feeling of genuine affection for Tajín. Such affection does not result automatically, but is the outgrowth of the friendliness, hospitality, and cooperation which we received on all sides. These endearing traits ameliorate the grimmer aspects of life in Tajín, where there are bickerings and feuds, both within families and between families, and where homicide is almost as frequent as is death from natural causes. In any case, for better or worse, these friends have made possible the description of life in Tajín, presented herein and in companion publications.

As is inevitable in Mexico, Totonac culture is a fusion of the old and the new, but as such, it is a living culture. Consequently, data come as much from observation and casual conversation as from direct questioning of informants; and in Tajín, it is not necessary to seek the aged, the lame, the halt, and the blind, for interrogation concerning their mode of life in the past. During both seasons, we had one regular, paid informant, Modesto

González, who was shared by the different members of the field party. Upon occasion, other individuals were asked to give us a full day of their time, for which we paid at the current local rate of $5.00 pesos.

All information was recorded in Spanish and was typed, in duplicate, on 5- by 8-inch sheets, which then were filed according to the invaluable key published by Murdock. In addition, we attempted what proved to be an over-ambitious census, which Miss Alvarez was able to fill for close to 40 families. However, it was not feasible to apply this census to the entire community—because the original questionnaire required a session of at least 2 hours; because many people were alarmed by inquiries concerning property and crops, fearing that an increase in taxes might result; and because of the diffuse settlement pattern, which made it impossible, for want of time, to visit all houses of the community. For language, age, costume, and provenience of parents and grandparents, all families of Tajín are represented in our census, but more detailed information is confined to about 40 households. In 1948, as a byproduct of our field investigations, Mr. Palerm took about 60 psychological tests, some Rorschach, some Thematic apperception.

In collecting data and in preparing the report, our interests have been relatively broad. We feel that our first obligation is descriptive, and we have attempted to formulate as clear and detailed a picture as possible of the modern community. Few ethnographic studies of Mexican groups are adequate from the simple descriptive aspect, and on all sides, one is frustrated for want of comparative material.

Secondly, we are particularly interested in the problems which beset the modern Totonac, and sprinkled throughout the report are suggestions concerning possible improvement in agriculture, diet, marketing, housing, and other themes. These have been made to the best of our ability, on the basis of first-hand knowledge of the local community. In all cases, final judgment of a specialist is required, but we have attempted to marshal the data so that he will be sufficiently oriented to form an opinion.

With the recent establishment of the Instituto Nacional Indigenista, under the directorship of Lic. Alfonso Caso, Mexico now has the mechanism for effecting reforms among indigenous communities. We hope that the current report may provide the Institute with fodder, so that the Government may take steps designed to improve the local standard of living and to incorporate the Totonac into national life.

As a rule, the Totonac hardly think of themselves as Mexicans—except in rare cases, when one drink too many has been passed, and an individual may express strong nationalistic sentiment. To most Totonac, the Mexicans are the city dwellers—the mestizos of Papantla, with whom the Tajín folk have their closest outside ties.

Yet, if given an opportunity, the Totonac might contribute a good deal to national life. Commercially, they already are making a major contribution, for virtually the entire vanilla production in the Papantla zone lies in their hands.

Apart from commercial aspects, the Totonac have many admirable human qualities. They are eager for learning. Almost every man hopes that his son—not his daughter—may have an education. At least two men, one at considerable sacrifice, send their sons to school in Papantla, for local training does not extend beyond the third grade. Over a period of years, the Totonac applied for Federal and State funds to assist in the construction of a school. When, after a long series of temporizing letters, no aid was forthcoming, the community built its own school. Stone was gathered through communal labor; land was rented, and again through public labor, maize was grown. From the proceeds of successive harvests, masons were brought from Papantla to erect the building. Work went slowly, but in the course of a few years, Tajín had a substantial stone school building, with tiled floor, a sidewalk, and cedar shutters. At long last, a small Government subsidy was forthcoming, and apparently is to be used for the purchase of school furniture.

Many Totonac are genuinely talented. Although none has formal training, several of our acquaintances draw with skill. Virtually all the men are musical, and Tajín boasts a surprising number of semiprofessional musicians who, with a minimum of training, play assorted instruments.

Not only are the Totonac gracious and thoughtful hosts, but they adopt orphans and take elderly indigents into their homes with a generosity quite unknown among us. Families in far from pros-

perous condition often bestow gifts—of maize, soap, or some other useful article—on distant relatives in poorer circumstances. The Totonac are real people; they are clean, self-respecting, eager for knowledge, friendly and warm. Although they are in immeasurably better economic condition than are most native groups in Mexico, obviously, their situation could be much improved, through judicious reforms and planned assistance.

Our interests are not limited to modern problems and their possible solutions. At the same time, we are genuinely interested in cultural survivals, and in an understanding of general historical background, without which no culture can be seen in perspective. A summary of available historical data has been prepared, so that the reader may view the modern culture in its proper setting.

With respect to the reconstruction of culture history, little can be attempted without fuller comparative material from other parts of Mexico. Ethnological investigation has lagged and relatively little is known of native peoples; the information at hand is both spotty and sparse. Many culture traits found among the Totonac may have a significant distribution. But for want of comparative data, we cannot guess whether they are old, widespread, possibly generic Mesoamerican elements, or whether their presence in Tajín is the result of influences from the highlands in relatively recent pre-Conquest times. There are suggestions of circum-Caribbean resemblances and even vaguer clues to what might be an essentially Gulf coast complex. But distributions are so imperfectly known that we can do little but mention the possible existence of such ties. Nevertheless, at the end of the second part of this report, we shall attempt to place the culture of Tajín, insofar as the data permit.

Concerning the immediate neighbors of the lowland Totonac almost nothing has been published. A large block of Mexicano and highland Totonac peoples lies to the west and southwest (map 2), but we know virtually nothing of their culture. The Tepehua and Otomí, farther west, and the Mexicanos to the northwest, are little more than names. Although the Huasteca—the great ethnic zone north of the lowland Totonac—has been studied exhaustively by G. Stresser-Péan, his report is unpublished. In the course of a brief conversation, he has been kind enough to provide a few comparative data, but until his monograph appears, the Huasteca will continue to be virtually unknown ethnographically.

We made a hasty week-end jaunt to the most accessible portion of the Huasteca,[2] merely to obtain some general impressions. The natural background—terrain, climate, and vegetation—are very similar to Tajín. House types and furnishings also seem pretty much the same, and agricultural problems must be roughly parallel. There are, however, some suggestive differences in economy. Although the Totonac raise yellow corn only incidentally and spurn it as human food, it appears to be the preferred maize in the entire Tamazunchale-Tancanhuitz zone (ftn. 69, p. 147). Moreover, in the part of the Huasteca we visited, vanilla is negligible or lacking. Perhaps in this area, cash income is derived instead from cattle. When Stresser-Péan's report is published, we should be in a position to appreciate more fully the differences and the resemblances between Totonac and Huastec.

The present volume (Part 1 of the report) opens with a series of chapters designed to give background for the Totonac as a whole, followed by a detailed discussion of economy, housing, and technology of the Tajín Totonac. Appendix A presents basic information concerning population and speech; B treats of the ancient Mexican conquests, with particular reference to Totonacapan; C is dedicated to vegetation; and D gives an informant's description of local birds. Appendix C contains our herbarium catalog. Many of the plants there listed are used medicinally; as a consequence, in part, this appendix anticipates the

[2] That is, the Tamazunchale-Tancanhuitz stretch of San Luis Potosí, along the international highway. By local residents, Tancanhuitz is considered Huastecan par excellence. The town itself appears to be essentially mestizo with, moreover, a generous sprinkling of *gachupín* merchants. However, on Sunday, people from small neighboring communities pour into town, and a fair proportion of the business transactions is in the Huastecan language.

Tamazunchale, at the southern end of the stretch, is not of Huastecan speech today. Both here and in nearby Matlapa, we are assured that the rural hinterland is predominantly Mexicano, with a scattering of Otomí. Presumably, this indicates a shift in speech since the middle of the sixteenth century, for then Tamazunchale lay in the province of Pánuco (Suma, No. 616). Dra. Eulalia Guzmán suggests that this replacement has resulted from colonization by Tlaxcalans along the route followed by Cortés in the course of his conquest of the Pánuco. Our feeling is that a good many Huastecan cultural elments have survived the shift in speech: for example, house type and a preference for yellow corn. However, until we know more of Huastecan culture, we are scarcely in a position to recognize possible survivals.

discussion of Tajín therapy, which will appear in Part 2.

Originally, we planned to include all of material culture in the first part. However, because of bulk, it appeared advisable to reserve the treatment of clothing and several other aspects of material culture for the companion volume (Part 2). The latter also will cover nonmaterial culture, although it is hoped that folk tales and our detailed account of the Negrito dance may be put on record through student publications; the first, by Roberto Williams García, the second, by Angel Palerm. The psychological tests mentioned previously are being prepared for publication by Carmen Viqueira, an advanced student in psychology at the Universidad Nacional de México.

In the spelling of modern pueblo names, we have followed the 1930 Federal census. Sometimes, for special reasons, the orthography of the sources has been retained; in such cases, the name appears in quotation marks. Names of extinct pueblos are so treated, likewise pueblo names no longer current, even though the town still may exist, under a different designation. For example, "Jicotepec" is the former name of modern Villa Juárez. The two exceptions are the famous old centers of Tlatelolco and Tenochtitlan; both appear without quotation marks and Tenochtitlan, without accent.

Spanish words and hispanicized terms of Mexicano or Nahuatl origin appear in italics, with exception of such well-known words as pueblo, arroyo, milpa, tortilla, atole, patio, machete, and so on. Totonac words are not italicized.[3]

ISABEL KELLY.

TEPEPAN, D. F.
*February 1950.*

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[3] We profess neither skill nor training in recording native terms. In general, vowels have Spanish values; this applies to *i, e, a, o,* and *u*. An open *e* occurs but was not distinguished consistently, hence has not been differentiated in the text. The symbols ɔ and ʌ represent vowel values found respectively in our "saw" and "but." Others include: ¢, pronounced *ts*; č, *ch*; š, *sh*; j, as in Spanish *jorobado*; *l*, sonant *l*; ł, surd *l*; ʎ, *tl*; *k*, *m*, *n*, *p*, *s*, and *t*, as in English; *q*, *back* palatal *k*; ñ, as in Spanish *cañón*; *w*, as in English "weather"; *y*, as in English "year."

A period above the line indicates lengthening; a reverse apostrophe (‘), aspiration

The glottal stop is represented by a hook (ʔ), which consists of a question mark without the basal point. Since there is a slight difference in the form of the interrogation point in the 6- and 10-point type used in the present paper, the corresponding symbols for the glottal stop are not quite identical. They are, nevertheless, readily recognizable. The glottal stop is prominent in Totonac and often is carried over into Spanish, especially by children. Thus, if one asks a youngster a question, the reply may be "Noʔ," or "Siʔ."

# THE TAJIN TOTONAC

## Part 1. History, Subsistence, Shelter, and Technology

By Isabel Kelly and Angel Palerm

## TOTONAC AND TOTONACAPAN

Early recognized as one of the major ethnic groups of Mexico, the Totonac are mentioned, although not in detail, by virtually all the early chroniclers.

The etymology of the name is unknown. That suggested by Patiño,[4] "three hearts" or "three beehives," seems somewhat artificial, although it is not impossible that his less literal translation of "three centers" may coincide with the modern dialectic areas (Aschmann, p. 34). Our informants agree readily to his translation of the component parts of the term but are unable to offer a translation of "Totonac" as such.

Slightly less studied is a late sixteenth-century explanation offered by residents of the Totonac pueblo of Jonotla,[5] who claim that the name applied to the "people and all this province and cordillera" is derived from that of an idol called Totonac. However, the 1581 informants from the Tetela region of the Sierra de Puebla state that the name means "people who come from where the sun rises" (Paso y Troncoso 5 : 152, 168).

Sahagún offers still another explanation. According to him, Totonac, together with certain other ethnic designations, are derogatory terms indicating, presumably in Nahuatl, little capacity or ability; however, his chief charge seems to be that the people of the lowlands are "too dressed up, and with flowers (roses) in their hands, and were very timid and rustic, or dull." [6]

Regardless of etymology, the term "Totonac" is well established in the literature. It is not clear how soon after the Discovery the Spaniards associated it with the people who later bore that name. The first Totonac known definitely to have had contact with the Spaniards was a delegation of five, sent from "Cempoala" to inspect Cortés' entourage. Díaz del Castillo (1 : 160) calls their language "totonaque," but since he wrote some 40 years after the incident, he may have projected a subsequent association into the past. Cortés himself does not mention the Totonac by name, nor does Oviedo, who, by his own statement, relied heavily upon the letters of Cortés. Gómara

[4] "Totonaco. Palabra compuesta de *toto,* tres y de *naco,* corazón ó panal que forman unas avispas negras, significando por lo mismo, 'tres corazones ó tres panales' (totonaco del rumbo de Chiconquiaco y del antiguo Zempoala) ; aquí en Papantla, tres en totonaco se dice *'Tutu'* y corazón *'Nacú.* En senido figurado podría traducirse por 'tres centros,' (porque así como el corazón es el centro de la circulación de la sangre, puede considerarse el panal como un centro donde reside ó afluye un pueblo de avejas ; en cuya acepción, en mi concepto, la aplicaron los primitivos totonacos para significar, quizá, que su territorio se componía de tres Estados ó Cacicazgos en cuyas capitales ó centros residían los Caciques Soberanos" (Patiño, p. 5).

[5] " . . . y que tenian vn ydolo a quien sacrificaban llamado TOTONAC, y que no savian ques la causa de llamarle deste nonbre, y que por este ydolo les llamauan los comarcanos a ellos Totonacas, y que asi oy en dia se an quedado con este nonbre este pueblo y toda esta prouinçia y cordillera . . ." (Paso y Troncoso 5 : 128).

[6] "Estos vocablos ya dichos, *tlalhuícatl, totonac, toueyo,* denotan en sí poca capacidad o habilidad, y así al que es inhábil o tosco le llaman de *tlalhuícatl,* o *totonac,* o *cuextécatl,* o *toueyo* . . . Sus defectos que tiene son que andan demasiadamente ataviados, y con rosas en las manos, y eran muy tímidos y toscos o torpes" (Sahagún 3 : 132).

Moreover, a sixteenth-century source from Jalisco gives Totonac as the equivalent of rustic : "La otra lengua es *totonac,* que quiere decir en nuestra lengua 'los rudos' " (Relación de Ameca, p. 252).

Evidently Totonac, like a number of other terms, may be applied to linguistically diverse groups which are considered rude or rustic. Perhaps for this reason, there are occasional references to Totonac in various parts of the country, well removed from the area we associate with them. One report, for example, has Totonac in the jurisdiction of old "Antequera" (Epistolario 2 : 90).

(1:111), not an eyewitness, merely identifies the five individuals as of "Cempoala." But shortly thereafter (1:127), when Cortés and his party visit "Quiahuixtlan," he remarks that the language spoken there and in all "that mountainous area" was Totonac. This would indicate that the term was current at least by the middle of the sixteenth century.

Several sixteenth-century descriptions of the Totonac, found in the *relaciones geográficas*, are far from flattering. Those of Papantla are said to be "rustic and rough," but hard-working. The Totonac of Misantla are described as people "of very little understanding, who want only to eat and drink" and who, moreover, "flee from work." Much the same is said of those of "Matlatlan" and Chila.

A far more sympathetic account is given by Las Casas (p. 465), on the evidence of an eyewitness,[7] who lived among the Totonac (or "Totones") in the years immediately following the arrival of the Spaniards:

> He [the informant] declared, however, one thing, that in all that time, he never saw an ugly and unjust thing which they did to one another, nor offense, nor wrangle (*reñilla*), nor affront of words, nor of deed, but that all lived in great peace, calmness, and concordance, humble and amiable with one another, taking care in nothing but to keep their laws and to occupy themselves in the acts and practice of their religion.

The area inhabited by the Totonac was called by the Mexicans Totonacatlalli (Sahagún 3:296). Generally, however, the old sources use the term, Totonacapan, of which there are variant spellings: Totonapan (Ixtlilxochitl 2:196) and Tonacapa (Epistolario 9:28). Later, we shall try to indicate the extent of Totonacapan in the sixteenth century and, subsequently, to define the area in modern times.

Until a physical anthropologist undertakes a serious study of the Totonac, little can be said concerning the physical characters of the people. Our observations below are casual and inexpert; and our acquaintance is limited to the Totonac of Tajín.

Here, the population consistently is short and slight. The two tallest men in the community—noticeable in a group because of their stature—are about 172 cm. in height. Others average several centimeters less, with the women still shorter. Most of our acquaintances are slim; one man and several women would be considered stout. There seems to be a markedly higher frequency of corpulence among women than among men. On the whole, the group is short and appears frail in build.

This frailness is deceptive, for the Totonac have extraordinary physical stamina. All are excellent and rapid walkers, but the outstanding endurance is found among the native dancers. For example:

> A group of Negrito dancers once invited us to accompany them to a neighboring village, where they were to perform. We left at dusk and spent a brisk two hours walking over hill and dale; the dancers scampered ahead and, puffing and wheezing, we barely were able to keep up with them.
>
> Once arrived, our companions changed to their dance raiment and danced all night, without a break. The Negrito dance is a particularly vigorous one, for it is essentially a rapid tap dance, with few rest periods. At dawn, the Negritos capered back to Tajín, leaving us far in the rear.
>
> The amount of energy required by such a performance is very considerable, especially during the excessive heat of the spring and summer months. Every Negrito dancer carries a handkerchief in one hand, with which to mop perspiration. And between numbers, he wrings the handkerchief, leaving the sounding board on which he stands spotted with perspiration.
>
> These all-night performances are routine work for the Negrito. Ordinarily, at least during several months of the year, there is practice once a week, interspersed with public appearances.

Moreover, when necessity arises, the Totonac are able to do with little or no sleep. An extreme case is presented by our friend, Agapito Pérez:

> Agapito is, like most of the Totonac, a farmer, but he also is a musician. He is violinist with one of the local orchestras and, moreover, with one of the groups of Negrito dancers.
>
> The latter gave a performance for us one Friday. Actual dancing started in the morning, between 10:30 and 11:00, and lasted until 5 in the afternoon. Except for an hour or so for dinner, Agapito played constantly. That evening, the same Negritos made a public, all-night appearance in honor of a visiting image of St. Joseph. The following morning, the orchestra, including Agapito, played in honor of the saint. That night, the same orchestra played for a dance given for the benefit of the

[7] ". . . lo hobe de persona que siendo muchacho lo vido por sus ojos estando solo entre aquellas gentes sin otro español alguno, al principio que en la Nueva España entraron cristianos . . ." (Las Casas, p. 460). We suspect that Las Casas' informant may have been the young page left by Cortés in "Cempoala," to learn the language. In any case, the informant is said to have remained 4 years (Las Casas, p. 465).

local school. And following the dance, the Negritos again performed, in honor of St. Joseph.

For Agapito, this meant constant violin playing most of Friday and all of Friday night and Saturday morning. Saturday afternoon, he slept a few hours, then walked to Papantla to buy new strings for his violin. He returned, to play all of Saturday night.

As a matter of fact, two nights a week, Agapito ordinarily does not go to bed, for he has one all-night practice with the orchestra and another with the Negritos. If either of these groups is committed to a public performance, he may be up a third night during the week. He regards this program casually and when he returns at dawn, goes directly to his fields to work.

This is not standard routine for all Tajín residents, but by and large the group exhibits marked physical stamina—the more remarkable since to us the diet appears to be quite deficient (see pp. 166–171).

Brachycephaly is marked, especially among children, who sometimes appear almost grotesquely broad-headed. Men, in particular, have fine features; for some obscure reason, the women ordinarily have heavier faces. There is a wide range in skin color; several people with noticeably yellowish tones may owe this color in part to malaria.

Ordinarily, the hair is dark and abundant. Generally it is straight, although a few individuals have slightly wavy hair. Baldness is unknown. In particular, women have beautiful hair, although often it is red-streaked, owing to the custom of adding lye to bath water. As is to be expected, body hair is scant. One individual is pointed out as meriting special attention in that he has hair on his chest and a relatively heavy beard; it is said, with considerable pride, that he is like "the tall people of Papantla."

Naturally, eyes are brown, but there is a small occurrence of light hazel eyes. We have made no consistent observations concerning the Mongoloid fold, although it occurs. The Mongoloid spot frequently is noted among small children, especially in certain families. Little Carmen, the 9-month-old daughter of Filiberta González, has a large, irregular blot at the base of the spine, with three smaller spots, more or less circular, above. An elder son, about 3 years old, now has lost his spot. Another son, aged 9 or 10, formerly had an exaggerated case, with markings even on the shoulders. The mother looked diligently, but now could find no trace. All of her eight children, she says, have borne this spot. However, the infant daughter of Doña Filiberta's brother gives no evidence of such marking.

Although it appears to us that the Tajín Totonac exhibit considerable racial intermixture, there are extremely few individuals who show noticeable Negroid characters. This is particularly noteworthy, since Veracruz is a zone where there was an early and fairly heavy introduction of Negroes. Papantla, however, appears to be outside the area of strong Negro influence (p. 37).

## SIXTEENTH-CENTURY DISTRIBUTION

The extent of sixteenth-century Totonacapan is shown in map 1.[8] Information is based on sources between 1519 and 1623 [9]—that is, from the Spanish Conquest to and including the visit made by Mota y Escobar.

The area lies along the Gulf coast, roughly from the Río Cazones, in the north, to the Río de la Antigua, in the south. Inland, it includes a large section of the eastern slopes of the Sierra Madre, as well as parts of the highlands of Puebla. The westernmost limits are represented by Pahuatlán (map 1, No. 58); by several settlements in the vicinity of Acaxochitlán (No. 72), on the present Hidalgo-Puebla frontier; and by Zacatlán (No. 69), in modern Puebla. From Zacatlán, the boundary runs almost due east to Jalacingo (No. 17) and Atzalan (No. 4), thence southeast to the Gulf, at the mouth of the Antigua.[10]

This southeast extension is well defined by the early records. In the zone of Jalacingo (No. 17) and Jalapa (No. 18), Mexicano is dominant, and southwest of these points, it occurs to the exclusion of Totonac. In none of the sources we have

[8] The map is essentially a graphic presentation of the language data which appear in table 14, of Appendix A, where also will be found a discussion of source material. Owing to bulk, it seems advisable to present the basic data in an appendix instead of incorporating them in the main text.

[9] This year, a full century following the Conquest, has been chosen arbitrarily so as to permit inclusion of the first-hand observations on native language made by Mota y Escobar, Bishop of Tlaxcala. There is not the slightest indication that Totonac speech was expanding at this time; in fact, all evidence is to the contrary. Accordingly, it seems likely that a pueblo which spoke Totonac in the days of Mota y Escobar likewise was Totonac during the immediately preceding years.

[10] On the whole, these limits coincide fairly well with early statements. For example, Torquemada (1: 398) quotes the chief of "Cempoala" to the effect that Totonacapan "almost reached to Pánuco." And Antonio de León (table xli) writes: "En Totonaca, Provincia, que por la costa de Nueva España se estiende, desde la Veracruz, casi hasta Panuco, i confines de Tututepec; i llega a la Cordillera, donde nace el rio de Almeria, que desagua en el Seno Mexicano."

*Legend to map 1.*

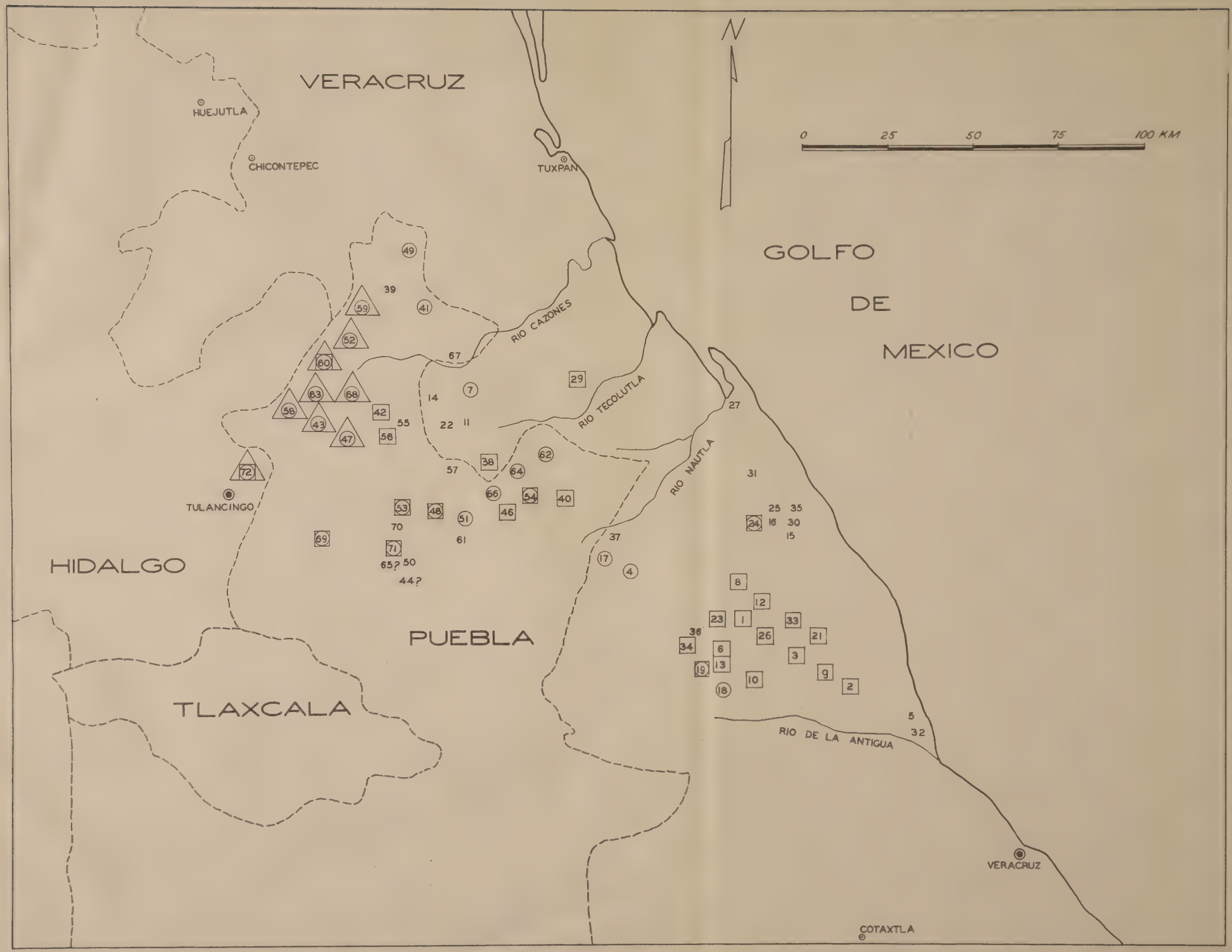
The extent of sixteenth-century Totonacapan, 1519 to 1623. Authority for each pueblo will be found under the corresponding number in table 14 of Appendix A.

The map shows all pueblos for which Totonac speech is reported, between the years indicated. However, to this time span there are two exceptions, Nos. 44 and 65. Here reference is to legendary prewhite days, hence an interrogation point accompanies these entries on the map.

A free-standing number represents a pueblo for which the sources mention only Totonac speech. However, the latter, quite frequently occurs with Mexicano and with Otomí. When the pueble is Totonac-Mexicano bilingual, the number is within a square. A circle indicates that both Totonac and Mexicano are reported, but without clear evidence of bilingual character; the two languages may exist side by side, without indication of intermixture, or the source may not be explicit.

Along the northwest frontier, Otomí occurs, in conjunction with Totonac and Mexicano. A triangle indicates the presence of Otomí; we have found no mention of pueblos of Totonac-Otomí bilinguals.

When the source material is confused or contradictory, a discussion will be found in the notes which accompany table 14.




MAP 1.—The extent of sixteenth-century Totonacapan.

(For legend see pp. 4.)

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examined is there the slightest indication that Totonacapan should be extended south to Cotaxtla, as Melgarejo (1943, p. 11) apparently contends. However, between Jalacingo (No. 17) and Zacatlán (No. 69), tradition recorded in the late sixteenth century (Paso y Troncoso 5:152, 168) would have Totonac once current in Cuautenco (No. 44) and Totutla (No. 65).

Along the western boundary, Mexicano and Otomí are reported, together with Totonac; farther west, the sources give only Mexicano and Otomí. However, it is possible that Totonac speech once extended slightly more to the west than our map indicates. For example, Torquemada (1:287) remarks that the Totonac abut on Tulancingo, just west of Acaxochitlán (No. 72), from which latter area there are definite reports of Totonac speech. Moreover, we know that there were active political, commercial, and even military ties between the Totonac and Tlaxcala, and that one of the principal objectives of the Triple Alliance was to open a separating wedge between the two peoples and to disrupt Tlaxcalan commerce (p. 21).

One problem concerning the western boundary revolves about the apparent non-Totonac enclave between Pahuatlán (No. 58), Huauchinango (No. 47), and Acaxochitlán (No. 72), on the one hand, and Zacatlán (No. 69), on the other. For this particular area, we have found no sixteenth-century records of linguistic affiliation. However, later reports indicate Totonac speech in precisely this zone—in Ahuacatlán, Amixtlán, Camocuautla, Coatepec, Huehuetla, Nanacatlán, Tonalixco, Tuxtla (AGN, No. 2), and Jalostoc (AGN, No. 4). Moreover, since the majority of these pueblos has retained the Totonac language until the present it appears justifiable to assume that Acaxochitlán and Zacatlán actually are not salient points westward, separated by non-Totonac territory.

The northern border presents greater difficulties. Here, Totonac speech presumably is bounded by the closely related Tepehua and by Huasteca. The northernmost pueblo for which Totonac is reported in the sixteenth century is Huitzila (map 1, No. 49), where, as a matter of fact, Mexicano is said to be dominant.

The Tepehua language receives little mention in the old records, although it is noted for Chicontepec, together with Otomí and Mexicano (Doctrinas, p. 219); for Huejutla, along with Mexicano (Paso y Troncoso 6:185); and for Huayacocotla (García Pimentel, 1897, pp. 248–254). Presumably, Tepehua also was current in "Conzoquitlan," near modern Tutotepec, in Hidalgo (Ixtlilxochitl 1:60). In present times (map 2), Tepehua is concentrated adjacent to the ancient northern peak of Totonac and, in Pantepec, overlaps with it. The sixteenth-century situation presumably was parallel.

On the coast, we have been unable to find any early records concerning the speech current in the zone immediately north of Papantla, although in the latter vicinity, the presence of Totonac is reinforced by a late reference to that language in Coatzintla (AGN, No. 8). Nevertheless, the native language of Tuxpan, in the days of the elder Moctezuma, evidently was Huasteca (Tezozomoc, pp. 105-110; Durán 1:165-171), hence the northern boundary of Totonacapan clearly lies somewhere between that point and Papantla (No. 29).[11] Here again, we must rely on modern evidence. Since in Tihuatlán and Cazones today, there is a considerable Totonac element (map 2), it seems not unreasonable to place the northern boundary somewhat north of Papantla, roughly at the Río Cazones.

South of Papantla (No. 29), between it and Misantla (No. 24), is a great expanse of territory for which there are no sixteenth-century records concerning speech. To be sure, Nautla (No. 27) lies at an intermediate point, although farther east, on the Gulf shore. Prior to the Spanish Conquest, a Mexican garrison had been established at Nautla, and it is quite possible that the Totonac withdrew from the immediate environs of the enemy post. Moreover, this whole strip of coast, from "Cempoala" (No. 5), north to Nautla (No. 27), and on to Tecolutla and Tuxpan, was appropriated by early Spanish settlers for cattle ranches (ftn. 67, p. 37). This likewise may have caused dislocation of any Totonac population. In any

[11] The Suma (No. 449) states that Papantla and Tuxpan comprise a single zone (*tierra*), and both pueblos were held by the same *encomendero*. The fusion by the Suma presumably does not rest on linguistic or ethnic grounds; more likely, it reflects the political organization found by the early Spaniards, for we know that Tuxpan and Papantla paid their tribute jointly to the Mexicans (Colección de Mendoza 5:87).

case, it appears that this stretch of country is one which does not lend itself to intensive agriculture, and in all likelihood, it was not heavily peopled at the time of the Conquest. Certain it is, there is no mention of any large Totonac centers in this zone, nor, so far as we know, have archeological remains of importance come to light.

The over-all configuration of ancient Totonacapan was curiously like a dumbbell, laid across the map from northwest to southeast (map 1). To the northwest was a heavy concentration of pueblos, with another in the southeast, the two connected by a narrow neck. The southerly cluster received the first impact of Spanish conquest and colonization. Its principal centers either disappeared early or became progressively acculturated, and today there are few remnants of Totonac speech in this area (map 2). On the contrary, the northwesterly cluster of Totonac pueblos managed to remain relatively aloof from Spanish influence. On the fringes of the Sierra Madre, it lay in rugged country, evidently off the beaten path in the sixteenth century as today. At present, as the result of this isolation, it is the zone strongest in Totonac speech and presumably in Totonac culture.

The neck which connected the two main bodies of Totonac language during the sixteenth century was surprisingly spindly and tenuous. Map 1 shows it to have been comprised of three pueblos only: Jalacingo (No. 17), Atzalan (No. 4), and "Yohualtlacualoyan" (No. 37). However, the direct route from the Valley of Mexico to the Mexican garrison in Nautla runs across this belt, and it may be that this stretch of country received strong impact from the campaigns of the Triple Alliance. We find no record of the speech current in the area immediately northeast of the narrow neck; but northwest and west, the pueblos were exclusively Mexicano.[12] It is not impossible that this strange bifurcation of Totonacapan represents one of the separating wedges so favored by the Mexicans and their allies.

We have seen that along the borders of ancient Totonacapan, there is evidence of mixing with other languages—with Mexicano on the south and west; with Mexicano and Otomí on the northwest. Within Totonacapan, it is possible that there may have existed an isolated nucleus of Mexicano in the Nautla area, owing to the establishment of a Mexican garrison at that point. However, we have found no mention of the linguistic affiliations of Nautla during the sixteenth century, and our one source states that it was Totonac in pre-Conquest times.

Nevertheless, throughout Totonacapan, there is constant reference to Mexicano and Totonac side by side (map 1). Ordinarily, the source states that Totonac is the mother tongue (*lengua materna*), Mexicano, the "general" language, spoken and understood by large numbers of the population. For this apparently bilingual character, various explanations, not mutually exclusive, may be offered.

In the first place, the political influence of the Triple Alliance and its military control throughout most of Totonacapan undoubtedly were contributing factors, although we doubt they can be considered basically responsible. Mexican hegemony seems to have been largely nominal and not of long standing. In the second place, it is well known that the Spaniards relied heavily on Mexicano in the course of their administrative and evangelization endeavors. This, too, undoubtedly played a role in emphasizing Mexicano in the years following the Conquest.

Nevertheless, a number of facts suggest that we must look more deeply for the real explanation. The general dearth of Totonac place names today is suggestive (pp. 51–53). In fact, the want of known Totonac equivalents for such important centers as "Cempoala" and "Quiahuixtlan" is extraordinary, the more especially since the Spaniards did not know these towns through Mexican introduction, but through direct, first-hand contact with the Totonac. Moreover, the Spaniards spent considerable time in both pueblos, and their Totonac hosts were important allies. In addition, it is evident that Mexicano was not confined to what might be called the ruling class, but apparently was quite generally known to the Totonac as a whole. At least, in Papantla, Mota y Escobar (pp. 232–233) preached in Mexicano, and was of

[12] For example, Ixtacamaxtitlán, Zautla, Tlatlauquitepec, Atempan, Altotonga, Teziutlán, Zacapoaxtla, Nauzontla, and Cuetzalán (Mota y Escobar, pp. 195, 196, 198, 223–225, 286).

the impression that his sermon was understood by the majority of the congregation. It appears most unlikely that sufficient time had lapsed between the Spanish Conquest—or, for that matter, between the conquest by the Triple Alliance—and the dates of our *relaciones geográficas* to account for such major inroads of Mexicano speech.

Accordingly, it is necessary to seek more ancient influences which might explain the essentially bilingual character of Totonacapan. Clues are by no means wanting. Legendary history indicates that there were early Toltec contacts in northern Totonacapan, long before the founding of Tula (Veytia 1:153–156); and there seem to have been subsequent ones, following the destruction of that great center (Ixtlilxochitl 1:89, 2:37). Corroboration of Toltec influence is provided by the archeological site of Teayo, north of Papantla, which generally is conceded to have marked Toltec resemblances (García Payón, 1947, pp. 302–303). Moreover, after the fall of Tula, there seems to have been considerable tribal dislocation; Totonacapan was touched by at least one wave of presumably Nahuatized invaders, the Olmeca-Zacateca (pp. 16–17), and by the Teochichimecs, who perhaps fall in the same linguistic category (p. 19).

These traditions of early penetration are suggestive, but there are more precise records of close contact in time of famine. In the fifteenth and sixteenth centuries,[13] there were at least two great periods of want in the Valley of Mexico. During the first, in the days of the elder Moctezuma, the Totonac took advantage of the situation to acquire slaves from the Valley in great number (Durán 1:248–249; Torquemada 1:158; Ixtlilxochitl 2:206; Chimalpahin, pp. 116–117). Apart from this slave element,[14] there seem to have been migrations of considerable importance; entire families moved from the Valley of Mexico to Totonacapan, where they established permanent residence and "where they remained until today" (Durán 1:248).[15] The second period of famine took place in 1505, and appears to have been roughly parallel,[16] although there are no records of outright migration.

In our opinion, these successive influences, reinforced by the late Mexican conquest, and further reinforced by the Spanish use of Mexicano as a lingua franca, are sufficient to explain the bilingual character of Totonacapan in the sixteenth century.

## SIXTEENTH-CENTURY POPULATION

The following discussion of the population of Totonacapan during the sixteenth century is based on sources which date from approximately 1550 to 1610. Nevertheless, for 16 pueblos, we have included estimates of the number of inhabitants in 1519, so as to have a rough basis for comparison. In both cases, the discussion is confined to pueblos which are said definitely to be Totonac, either wholly or in part, according to various records between the years 1519 and 1623. As in the preceding section, basic source material is given in full in table 14, of Appendix A, and the explanation which accompanies the table includes a discussion both of sources and of our manner of calculating population.

Attention already has been called to the curious distribution of Totonac speech in the sixteenth century, with one zone of concentration in the northwest and another in the southeast. Since these two areas present rather distinct aspects, from the viewpoint of population, they will be treated separately.

### SOUTHERN TOTONACAPAN

The cluster of Totonac pueblos to the southeast was the first to feel the impact of Spanish conquest and colonization, and early records are relatively

[13] One source (Códice Chimalpopoca, p. 13) reports prolonged famines at earlier dates, allegedly in the tenth and eleventh centuries, during Toltec dominance. There is no specific mention of Totonacapan, but it is not impossible that the fertility of the coast attracted the Toltec then, as it did the Mexicans in later times.

[14] ". . . les anciens Mexicains se vendirent, et . . . deux parties, dit-on, se donnèrent en servitude. C'est pour cela que les Totonaque principalmente vinrent acheter des Mexicains . . ." (Chimalpahin, pp. 116–117).

[15] The same author (1:249) adds: ". . . y así se hallan oy en dia en aquella tierra barrios de mexicanos, chalcas, tezcucanos, xuchimilcas, tepanecas . . ."

[16] ". . . solamente hubo maíz en lo que llaman Totonacapan . . . y allí acudieron a proveerse y remediarse los que pudieron" (Mendieta 2:16).

plentiful concerning this area. Population figures for southern Totonacapan may be summarized as follows:

| Pueblo | Population | | |
|---|---|---|---|
| | Ca. 1519 (from column E, table 14) | 1565 (after Cook and Simpson) | Ca. 1550–1610 (average, from column H, table 14) |
| Acatlán (No. 1) [1] | 2, 000 | 400 | 388 |
| Almolonga (No. 3) | 6, 000 | 82 | 82 |
| "Cempoala" (No. 5) | 80, 000–120, 000 | 48 | 72 |
| | 80, 000 | ---------- | ---------- |
| | 120, 000 | ---------- | ---------- |
| | 80, 000 | ---------- | ---------- |
| Chapultepec (No. 6) | 8, 000 | 525 | 547 |
| "Ciguacoatlan" (No. 12) | 4, 000 | 200 | 167 |
| Coacoatzintla (No. 13) | 3, 200 | 577 | 505 |
| Colipa (No. 15) | 24, 000 | ---------- | 467 |
| Jalapa (No. 18) | 120, 000 | 2, 556 | 3, 868 |
| Jilotepec (No. 19) | 4, 000 | 1, 493 | 1, 289 |
| Miahuatlán (No. 23) | 8, 000 | 600 | 333 |
| Naolinco (No. 26) | 6, 000 | [2] 860 | 902 |
| Tepetlán (No. 33) | 4, 000 | 426 | 376 |
| Tlacolulan (No. 34) | 8, 000 | 2, 800 | 1, 975 |

[1] Numbers refer to table 14, Appendix A.
[2] With Colpa, "Almería," "Malinalcingo," Tlapacoyan, and "Tamomolo," the latter pueblo in the Huasteca.

This tabulation brings three points into strong relief: (1) the presence of large centers of population such as "Cempoala," Colipa, and Jalapa, together with other pueblos of moderate size; (2) the major decline in population following the Conquest; and (3) the relative stability between 1565 and 1610.

The presence of urban centers perhaps is to be explained by intensive agriculture, combined, at least in some pueblos, with irrigation (p. 99). It is evident from early accounts that, far from being merely a ceremonial center, "Cempoala" was an urban settlement with a large productive population. Moreover, references to the number of warriors in "Cempoala" and its immediate vicinity confirm the impression of a dense population.[17] Cortés (Gayangos, p. 53) places the number at 50,000, as does Oviedo (3:261). Other authors, among them Torquemada (1:402), raise the number to 100,000. Even if we take the lower figure, a total population of 250,000 would be indicated for "Cempoala" and neighboring pueblos, following the ratio suggested by Cook and Simpson (pp. 22–30).[18]

The sharp reduction in population and the disappearance of urban centers is explained in various ways by contemporary and slightly later sources. Illness seems to be the dominant motif. In only one case (Almolonga) is depletion attributed to war (Paso y Troncoso 5:118). In others ("Ciguacoatlan," Coacoatzintla, Tepetlán) the reason is said to be, in part, "personal service" which the Indians are obliged to give in Veracruz (Paso y Troncoso 5:110, 116, 117). Díaz del Castillo (3:150) blames a sugarmill with the destruction of "Cempoala"; Cortés places the responsibility on Narváez,[19] which may, of course, be no more than a reflection of the enmity between the two Spanish leaders. However, in 1529, the steward of Cortés reports that "Cempoala" is in such a state that with major difficulties can 20 Indians be collected for "service" (Epistolario 1:141).[20]

There also is evidence that at least two great epidemics swept Totonacapan: the first, about 1545, and the second, in 1576 (Paso y Troncoso 5:100).[21]

[17] Shortly after the Discovery, Escalante was able to muster 6,000 Totonac warriors rapidly, for an attack on Nautla (Epistolario 1:76) (p. 29).

[18] The above discussion applies only to "Cempoala" and vicinity. But other sources confirm the impression of a dense population in southern Totonacapan. For example: ". . . al tiempo que los españoles entraron en ella auia dentro de seis leguas a la rredonda desta çiudad muchos lugares y poblaciones grandes de yndios los quales an benido en tanta diminuçion que muchos dellos se an despoblado de todo punto sin quedar rrastro dellos ni mas memoria que solos los nombres y otros tienen agora tan poca veçindad de gente que para lo que fueron antes es lastima de ver el estremo en poquedad á que an benido . . ." (Relación de Veracruz).

[19] He writes (Gayangos, p. 125) that with the arrival of Narváez, ". . . ya estaba casi destruida, porque los que con el dicho Narvaez en ella estaban la habian robado, y los vecinos della estaban ausentes y sus casas solas . . ."

[20] In 1585, "Cempoala" still is mentioned (AGN, No. 3), but by about 1598, only three or four persons remained and they were shifted elsewhere. The place is not specified, and we know only that they were moved to a pueblo visted from the Franciscan center in Jalapa (Torquemada 1:397).

[21] Both were general in New Spain. Concerning the earlier epidemic, it is said: ". . . en diez leguas a la redonda de México de cumbres abajo que se ha llevado la enfermedad de siete meses a esta parte más de cuatrocientos mil cuerpos . . ." (Epistolario 4:232).

The great epidemic of 1576 ". . . fue tan grande, que arruinó y destruió casi toda la Tierra, y aun casi quedaron despobladas las Indias, que llamamos Nueva España . . . quiso saber el Virrei Don Martin Enriquez, la Gente que faltaba, en esta Nueva-España, y fuese tomando raçon de esto por los Pueblos y Barrios, y hallóse, que avian sido los muertos mas de dos millones . . . excedió esta mortandad á las pasada del Año de 1545, en doce veces cien mil Personas. Porque en la Pestilencia del Año de 1545, murieron ochocientas mil Personas . . ." (Torquemada 1:642–643).

However, it is evident that there were more than these two great epidemics. Motolinía (pp. 17–28) speaks of the "ten

The reduction of population in southern Totonacapan must be considered from two points of view: the true decline, principally through epidemics; and the apparent decline, through the flight of the Indians from their ancient centers. The latter presumably was a major factor in Atzalan (AGN, No. 12), as it was in "Cempoala," where, between 1519 and 1529 (No. 5, table 14), an original population, estimated at 80,000 to 120,000, apparently dwindled to 80. Despite the gravity of the epidemics, such a drastic reduction, from disease alone, seems unlikely, and flight of population to more inaccessible points may have been more significant than the sources imply (pp. 36–39).

In general terms, the evident stability of population between about 1550 and 1610 may be explained by the absence of factors which provoked decimation. There seems to have been a lull in epidemics; there was an improvement in general conditions, owing to royal patronage; and the people had more or less accepted and had become adapted to the political, social, and economic structure of the colonial era.

## NORTHERN TOTONACAPAN

Information concerning the northwest nucleus, and northern Totonacapan in general, is relatively meager, owing to remoteness from main Spanish routes of travel and to less intensive colonization during the first century following the Conquest. In large part, northern Totonacapan runs along the fringes of the Sierra Madre, and there are early references to its rugged character, its difficult communications, and its lack of readily exploitable resources. These features repelled Spanish colonization, and, at the same time, offered an asylum for Totonac fleeing from other areas.

This same topographic character may explain the apparently low density of population in pre-white times. Although in parts of southern Totonacapan, irrigation was practiced (p. 99) and presumably stimulated the growth of large urban centers, the streams of northern Totonacapan are deeply entrenched, with nearly vertical walls, and irrigation is practically out of the question. In any case, in northern Totonacapan as a whole, native settlements at the time of the Conquest seem to have been of modest size and, except for Papantla, there is no suggestion of any really large urban concentration. Unfortunately, with respect to the population in 1519, there are estimates for only three pueblos:

| Pueblo | Population | | |
|---|---|---|---|
| | Ca. 1519 (from column E, table 14) | 1565 (after Cook and Simpson) | Ca. 1550–1610 (average, from column H, table 14) |
| Chila (No. 42) [1] | 8,000 | [2] 6,400 | 1,561 |
| "Matlatlan" (No. 56) | 8,000 | | 1,400 |
| Papantla (No. 29) | 60,000 | [3] 1,200 | 1,361 |

[1] Numbers refer to table 14, Appendix A.
[2] Chila with "Matlatlan."
[3] With "Tuzapan."

Although not much generalization is possible on the basis of such scanty information, it is obvious that the population of Chila and "Matlatlan," apparently the largest of the highland settlements, was relatively small when compared to pueblo estimates in southern Totonacapan.

However, there is no dearth of sixteenth-century references to reduction of population.[22] The decline is attributed to various causes, but mortality in battle is not included. In some cases, illness [23] is mentioned but less emphasis is placed on it than in southern Totonacapan. Although we do not wish to underestimate the effects of the epidemics which scourged New Spain between 1519 and 1576,

plagues more cruel than those of Egypt" which afflicted New Spain. According to him, the first started in "Cempoala" through a Negro with smallpox, who accompanied Narváez. This heretofore unknown disease took a heavy toll, and "in some provinces half the people died, and in others, somewhat fewer" (p. 18). Eleven years later, there was an epidemic of measles, although "not as many died as of smallpox" (p. 18).

Considering that southern Totonacapan was the focal point for the arrival of Spanish ships, it seems likely that it suffered first from the ailments of the Old World, against which the Indians had no immunity.

In addition to disease, as a factor in decline of population, Motolinía (pp. 22–26) cites the Conquest, hunger, the *encomenderos*, tribute, service in mines, slavery of natives, and the construction of the City of Mexico.

[22] When Diego Ramírez visited Ixtepec, in 1552, he reduced the tribute to a third, because of the decrease in population (Epistolario 8: 154). For the same reason, in Jonotla, he reduced it nearly to half (Epistolario 8: 154–155); and he met similar conditions in Zacatlán and Pahuatlán (Epistolario 8: 4–5, 14–16).

Moreover, by 1581, "Tuzapan" had been abandoned and Tenampulco had "hardly any Indians" (Relación de Papantla). By the early years of the seventeenth century, Hueytlalpan also had been seriously affected (Mota y Escobar, p. 226).

[23] Of "Tonatico," it is said, ". . . no tiene gente por las muchas calores y pestilencias que alli a avido ques tierra muy enferma sobre manera" (Relación de Papantla). And for "Matlatlan" and Chila, the explanation is similar: ". . . se han ido disminuyendo con las grandes enfermedades . . ." (Relación de "Matlatlan" y Chila).

it would appear that they were less significant among highland than among coastal Totonac pueblos. Moreover, in the Sierra, flight and concealment of the natives appears to have been practiced on a large scale.[24]

In fact it would seem that in northern Totonacapan, especially among the highland pueblos, decimation did not attain the same extremes as in the south; at least in a number of cases,[24] the reduction evidently was more apparent than real. As a matter of fact, since the rugged area along the scarp front of the Sierra served as an asylum for Totonac fleeing from elsewhere, it is by no means impossible that, owing to the influx of refugees, the population in parts of northern Totonacapan actually increased during the sixteenth century.

However, there is evidence of a major retraction from west to east. Originally, northern Totonacapan included pueblos in the open country of the highlands—Zacatlán and Acaxochitlán, for example—but by the end of the sixteenth century, the Totonac had withdrawn from these two settlements, as well as from Pahuatlán, apparently moving eastward to the rugged country along the fringes of the Sierra Madre. In any event, today, the surviving Totonac are concentrated in the broken country along the scarp front of the Sierra.

In summary, the most important aspects of population in northern Totonacapan may be characterized thus: (1) absence, with the sole exception of Papantla, of great urban centers at the time of the Conquest; (2) scant Spanish colonization; (3) an appreciable retraction from west to east, with pueblos on the high plateau abandoned, but (4) combined with less actual reduction in population between 1519 and 1550 than that which took place in southern Totonacapan; (5) an influx of refugees to the more rugged parts of the zone; and (6) as the final outcome, a concentration of surviving Totonac along the rugged slopes of the Sierra Madre scarp front.

[24] It is said of Chichilintla that the number of *tributarios* had not been counted (Epistolario 14: 77), and of Chumatlán, that the *tributarios* should be somewhat more than reported "because they always hide" (Mota y Escobar, p. 232).

Concerning Pahuatlán, ". . . había en el dicho pueblo gran cantidad de gente y después acá por los ecesivos tributos había venido en gran diminución" (Epistolario 8: 14–15). For Papantla, "Tuzapan," Tihuatlán, Jalpan, and Tancoco (the latter in the Huasteca), one document says flatly that the number of *tributarios* is not indicated, ". . . porque no se puede saber, y la causa es por que en toda esta tierra tienen los yndios por costumbre de andarse mudando de un pueblo a otro, por gozar de vn año de libertad que tiene un idio recienvenido a un pueblo de no pagar tributo, y otros se huyen por la dotrina . . ." (Doctrinas, p. 220). Perhaps the population decline in Papantla, which is comparable to that of large centers of southern Totonacapan, is to be explained in part by this tribute exemption, in part by the establishment in that zone of a large number of stock ranches (ftn. 67, p. 37).

## TOTONACAPAN AS A WHOLE

Columns G and H of table 14 (Appendix A) give subtotals of the sixteenth-century population, according to the modern states in which the pueblos are located. These may be combined as follows:

| State | Population | |
|---|---|---|
| | 1565 (after Cook and Simpson) | Ca. 1550–1610 (sum of averages, column H, table 14) |
| Veracruz | 31, 341 | 37, 417 |
| Puebla | [1] 63, 462 | 59, 884 |
| Hidalgo | | 3, 699 |
| Total | 94, 803 | 101, 000 |

[1] Including Acaxochitlán, in modern Hidalgo.

These figures must fall far short of the actual sixteenth-century population, for the following reasons: (1) Parts of the population evidently contrived to hide, despite the fact that they resided near pueblos. (2) A large number of Totonac escaped direct Spanish domination, through flight to inaccessible areas. (3) Some records, based on number of tribute payers, presumably are incomplete, since during the first year of residence, families were exempt from taxes. (4) There are no data whatsoever for large parts of Totonacapan—for example, the area between Misantla and Papantla; the stretch of country just north of Papantla; that east of Atzalan and Jalacingo; the zone between Zacatlán and Huauchinango; the area north of Chila; and the rugged strip along the Sierra Madre, which functioned as a large-scale refuge site. Manifestly, the sum of these combined omissions must be very considerable, but it is not possible even to guess at the extent of the error.

As an aside, the estimated 101,000 for the sixteenth-century population of Totonacapan is pretty close to the modern figure. Our count, based on the 1940 census, shows 90,378 Totonac,

including monolinguals and bilinguals, but not including children of less than 5 years of age (p. 14). In some communities the latter account for close to 20 percent of the population; accordingly, if small children are added to our count, the modern population would exceed that calculated for the sixteenth century.

With respect to the pre-Conquest population, early estimates are chiefly pueblo by pueblo, and the only figure which may be converted into an approximate subtotal is that for "Cempoala" and environs. This we assume to mean southern Totonacapan, exclusive of the narrow neck about Jalacingo (map 1). For "Cempoala" and vicinity, the lowest estimate is 50,000 warriors, which should indicate a total population of 250,000 persons (p. 8). Yet, subsequently, sixteenth-century sources credit the pueblos of southern Totonacapan with a combined population which averages less than 16,000 persons. This is about 6 percent of the supposed prewhite population, and the reduction rate may be placed at 16.1 (table 1).

For northern Totonacapan, there is no such over-all estimate. The 1519 population of Papantla may be placed at 60,000 individuals (No. 29, col. E, table 14, Appendix A). Here the reduction is even more drastic. Sources allow Papantla a post-Conquest, sixteenth-century population which averages 1,361 individuals, or only 2 percent of the alleged prewhite population. We reckon the reduction rate at 44.1 (table 1).

For the balance of northern Totonacapan, we may hazard a guess. (1) The sixteenth-century averages for "Matlatlan" and Chila are between a fifth and a sixth of the population reported for prewhite days (p. 9). Actually the rate of decrease for "Matlatlan" is 5.7; for Chila, 5.1; the average is 5.4. We may assume arbitrarily that this latter rate of reduction is applicable generally to northern Totonacapan, exclusive of Papantla. (3) Accordingly, we may total the averages for the remaining pueblos of northern Totonacapan (footnote 3 of table 1 specifies the pueblos whose population averages have been taken from col. H, table 14, Appendix A); and to this total (4) we may apply the ratio which holds for "Matlatlan"–Chila. This somewhat unorthodox procedure gives a total of 393,228 persons in northern Totonacapan, exclusive of Papantla.

TABLE 1.—*Population density*

| Area | Population | | Estimated rate of decrease | Territorial extent (km.²) | | Density | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | 1519 | | Modern |
| | 1519 | Ca. 1550–1610 (sum of averages, col. H, table 14, Appendix A) | | By triangulation | By modern municipal units | Based on triangulation | Based on modern municipal units | Based on modern municipal units |
| Southern Totonacapan (exclusive of Jalacingo area) [1] | [2250,000] | 15,480 | 16.1 | 3,987 | 4,740 | 63 | 53 | 40 |
| Northern Totonacapan (exclusive of Jalacingo area and Papantla) [3] | [4393,228] | 72,820 | [5] 5.4 | 6,961 | 7,612 | 56 | 52 | 41 |
| Northern Totonacapan (Papantla only) [6] | [7 60,000] | 1,361 | 44.1 | ----- | ----- | ----- | ----- | ----- |
| Intermediate (Jalacingo area) [8] | [4 61,231] | 11,339 | [5] 5.4 | ----- | ----- | ----- | ----- | ----- |
| Total | 764,459 | 101,000 | ---- | ----- | ----- | ----- | ----- | ----- |

[1] Including the following pueblos, from table 14: 1–3, 5, 6, 8–10, 12, 13, 15, 16, 18, 19, 21, 23–26, 31, 33–36.
[2] Estimated on the basis of 50,000 warriors reported for "Cempoala" and vicinity, in 1519.
[3] Including the following pueblos, from table 14: 7, 11, 14, 22, 38, 39, 41, 42, 47–54, 56, 58–60, 62–64, 67–69, 72.
[4] Calculated on the basis of the ca. 1550–1610 averages, to which we have applied the ratio of reduction which took place in "Matlatlan" and Chila.
[5] Ratio of reduction demonstrable only for "Matlatlan" and Chila.
[6] Pueblo No. 29, table 14,
[7] Calculated on the basis of 15,000 *vecinos*.
[8] Including the following pueblos from table 14: 4, 17, 37.

The Jalacingo area still is outstanding. Here, arbitrarily, we shall apply the same "Matlatlan"–Chila ratio of 5.4. Since the sixteenth-century population in that zone averages 11,339 we derive 61,231 as the hypothetical total at the time of the Spanish Conquest (table 1).

These calculations are summarized in table 1, where an effort also is made to indicate density of population. Naturally, the territorial extent of ancient Totonacapan (map 1) can be reckoned only approximately. It was calculated first by triangulation, on a 1:500,000 published map (México, Atlas geográfico) and then was checked (succeeding column, table 1) by the area given in the 1940 published census for each modern municipal unit which appeared to fall within the limits of sixteenth-century Totonacapan. Manifestly, in both cases the error must be very considerable, for the borders of the ancient province are ill-defined. Accordingly, the figures make no pretense at accuracy, although they permit us to calculate, after a fashion, the approximate density of population in Totonacapan at the time of the Spanish Conquest.

For comparison, the table shows the modern (1940) density within the same municipal units which appear, as far as we can tell, to coincide with ancient Totonacapan. Again, the figures are no more than suggestive. The modern density is somewhat less than that calculated for the early sixteenth-century province, although the differences are not excessive.

All told, the population estimates for 1519 seem not to be unduly exaggerated. Southern Totonacapan, at least, boasted large urban centers [25] at the time of the Conquest; and Papantla, to the north, also was essentially urban. Lowland Totonacapan, as a whole, was an exceptionally favorable zone for human occupation, and later it will be seen that, since early times, its natural riches attracted the attention and aroused the greed of the peoples of the central highlands.

## MODERN DISTRIBUTION AND POPULATION

The present-day distribution of Totonac speech [26] is shown in map 2, and the succeeding map compares the extent during the sixteenth century and modern times.

Shrinkage has, of course, taken place, particularly in the south, where nothing remains save two small islands of Totonac in the rough country north of Jalapa.[27] Moreover, the narrow connecting neck, which formerly united northern and southern Totonacapan in the Jalacingo-Atzalan area (map 1), no longer is Totonac. In short, southern Totonacapan has all but disappeared, and the small cists which remain are rapidly absorbing both Spanish speech and Mexican mestizo culture.

[25] For example, a sixteenth-century author writes as follows: "De aquí ["Sempual"] adelante, hasta Pánuco, podrá haber hasta cincuenta leguas. Había, así en la costa como esviados de ella, muy grandes villas, poblaciones y provincias, todas muy llenas de gente y muy pobladas: muy grandes poblaciones y muy lindas al parecer, llenas de frutales, y ahora, está todo desierto y con muy poquitos indios" (Aguilar, p. 97).

Archeological evidence likewise confirms the impression of a dense population, and although the survey avowedly is incomplete, 606 archeological sites have been reported, scattered between the Río Pánuco, on the north, and the Tancochapa, on the south (García Payón, 1947, pp. 301–302). Although a considerable time span may be represented, nevertheless, the fact remains that archeological sites are plentiful.

[26] Our modern distribution does not accord in detail with that published by González Bonilla, on the basis of the 1930 census. He reports small Totonac elements in Tenango and Acayucan (both in Veracruz) and in Tlaltenango (Puebla). Moreover, he credits Reyes (Veracruz) with an extraordinarily high occurrence of Totonac. All these pueblos lie far afield of our Totonac block and, according to the 1940 census, are innocent of Totonac speech.

[27] Actually, Totonac speech has survived in a number of adjacent municipalities (table 15, Appendix A), but since it amounts to less than 3 percent of the population, it has been disregarded in maps 2 and 3. This holds, incidentally, for Misantla. However, it may be that here census records are inaccurate, since Prof. José Luis Melgarejo, intimately acquainted with Misantla, is under the impression that most of the inhabitants are Spanish-Totonac bilinguals.

*Legend to map 2*

Modern Totonacapan. As a base, we have enlarged a map of municipal units, issued by the Secretaría de la Economía Nacional, Dirección General de Estadística, Dirección de Geografía, Meteorología e Hidrología, 1941.

The present-day distribution of speech here shown is taken from the 1940 Federal census records—not the published reports, which ignore bilinguals, but the original census sheets, on file in the offices of the Dirección General de Estadística. The published census considers as Spanish-speaking all bilinguals who control both Spanish and a native tongue; we have reversed the procedure and here have counted such bilinguals as of native speech.

Table 15, of Appendix A, gives the key to municipal units, as well as the numerical basis for the language distribution here shown. The key to the five native languages of the area—Totonac, Tepehua, Mexicano, Otomí, and Huastec—appears on the map; other native idioms scarcely occur.

Within each municipal unit is a circle, whose sectors correspond in size to the percentages of the languages shown. Occurrences of less than 3 percent have been ignored because of the difficulty of depicting such a small area; they have been absorbed automatically by the white sector. However, table 15 gives all ratios which exceed 1 percent, as well as the complete incidence.

The white sector is essentially residual. We have just noted that it includes (*a*) occurrences of less than 3 percent of the native languages mentioned above. Apart from this negligible element, it corresponds to the percentage given in the last column of table 15. Thus it includes (*b*) all languages other than the five specified. In many municipal units, Spanish monolinguals are the chief ingredient, but there is a sprinkling of other Indo-European and of native languages.

Likewise, the white sector includes (*c*) all children under 5 years (5 *años cumplidos*), irrespective of speech. Although they are represented in the totals on which our percent ratios are based, their speech is not reported by the census. Through lack of foresight, we did not keep count of the number of children thus eliminated linguistically. In some pueblos, this age group accounts for 20 percent of the entire population. Accordingly, some of the municipal units along the Puebla-Veracruz border show a sizable white sector, although, actually, the communities are almost wholly Totonac. In fact, in Camocuautla (No. 100), the white sector is comprised exclusively of children under 5 years of age.

Tamiagua
Tantoyuca
Tepetzintla
Chicontepec
Temapache
Ixhuatlán
Teayo
Tuxpan
Francisco Z. Mena
Tihuatlán
Coatzintla
Papantla
Gutiérrez Zamora
Tecolutla
Espinal
Martínez de la Torre
Tenampulco
Nautla
Vega de Alatorre
Villa Juárez (Jicotepec)
Huauchinango
Jopala
Jalpan
Misantla
Zacatlán
Zacapoaxtla
Xicotepec de Ocampo
Zautla
Alto Lucero
Actopan
Jalapa
GULF OF MEXICO
HIDALGO
PUEBLA
TLAXCALA
VERACRUZ
N
5 25 50 Km.

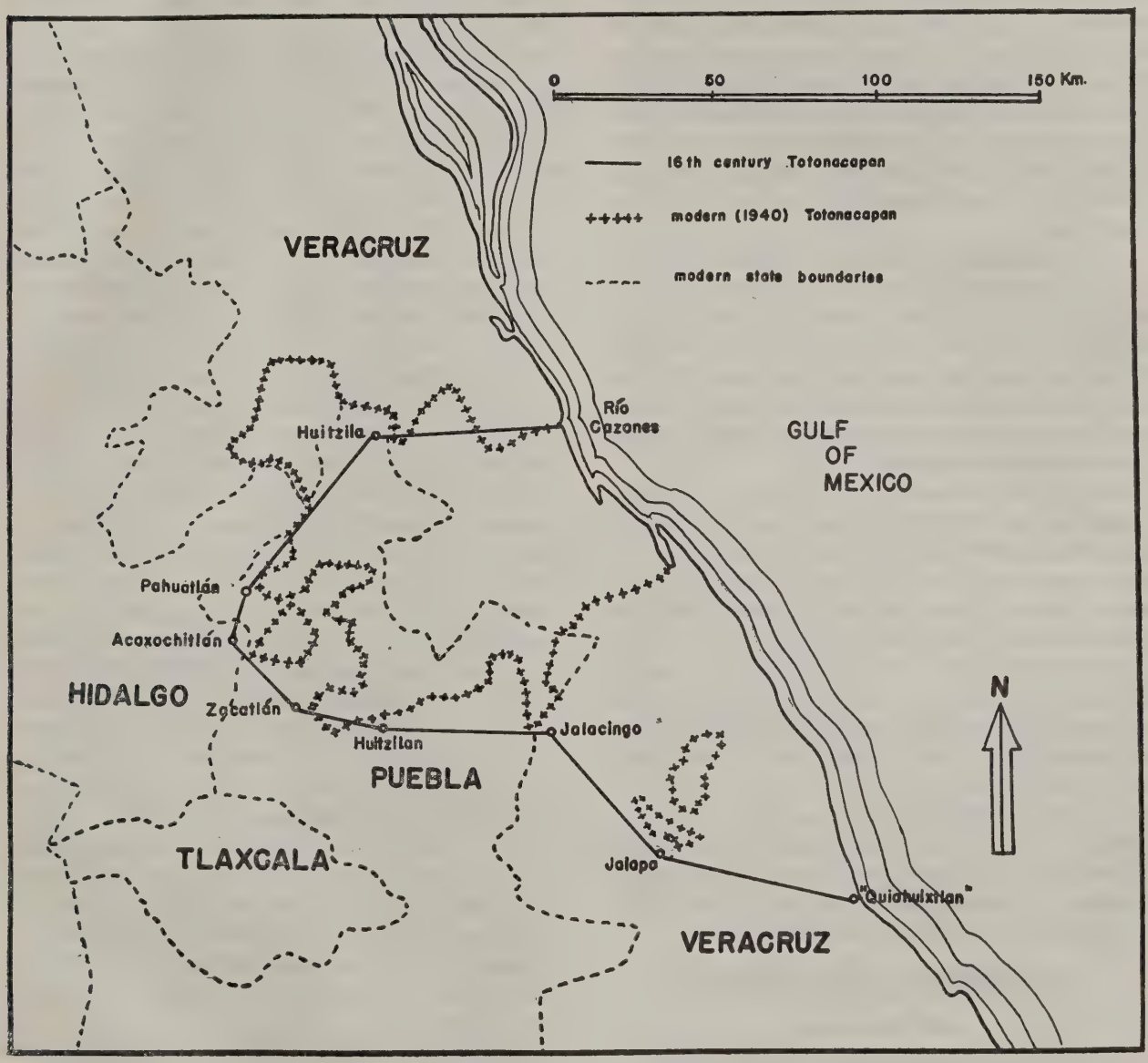
Totonac areas
State boundaries
Totonac
Tepehua
Mexicano
Otomí
Huastec
Other languages and all children under 5 years

Map 2.—Modern Totonacapan.

(For legend, see p. 12.)

893477 O—52 (Face p. 12)

The northern frontier continues to present difficulties, which are more apparent than real. It will be remembered that sixteenth-century data are deficient and there are no early records of Totonac speech north of Papantla. However, we postulated (p. 5) a former extension to the Río Cazones, and thence to Huitzila. It would appear from map 3 that the modern boundary runs even farther north. Actually, only two municipalities are involved, Ixhuatlán and Tihuatlán. In these, Totonac speech is by no means general. In Ixhuatlán, all occurrences fall within the old Huitzila-Cazones frontier; and only in Tihuatlán a few settlements spill over the old hypothetical boundary. In short, despite the map, modern and ancient limits coincide pretty closely.




Map 3.—Sixteenth-century and modern Totonacapan compared.

The over-all limits of sixteenth-century Totonacapan have been taken from map 1, by connecting with a line the outermost pueblos of Totonac speech.

Modern boundaries are based on map 2 and give distribution by municipal unit, not by individual pueblo. In some cases, this results in an impression of greater extension than actually is the case, since—particularly in peripheral zones—Totonac is confined to one or two settlements and is not generally distributed throughout the municipal unit.

In the west, there has been a strong retraction in the vicinity of Pahuatlán, Acaxochitlán, and Zacatlán. The reduction is somewhat greater than map 3 suggests, inasmuch as Totonac pueblos are found today only in the eastern parts of the municipalities of Huauchinango and Villa Juárez. The abandonment by the Totonac of these highland areas has been noted previously (pp. 5, 10).

Numerically, the Totonac still are important. According to the published 1940 census, there are 59,242 Totonac monolinguals; our count, based on the original census sheets, yields 59,506 monolinguals, 30,872 bilinguals. In short, there is a total Totonac population of 90,378 persons, not including children under 5 years of age who in many communities constitute 20 percent of the inhabitants.

Of this Totonac population, 10,774 monolinguals and 6,948 bilinguals live in the district (*municipio*) of Papantla (total population: 34,257). In other words, even with small children excluded, Papantla today is about half Totonac. For the most part, the Totonac live in the small outlying settlements, although the town of Papantla itself has a significant element.[28]

Far higher percentages of Totonac are found along the still inaccessible parts of the Puebla-Veracruz border (map 2), where some communities are essentially monolingual. Yet of lowland areas, Papantla today has the strongest ingredient. This is of particular interest, for certain sixteenth-century sources (table 14, Appendix A) mention Mexicano in this zone, along with Totonac; and in the mideighteenth century, Villaseñor (1:319), almost certainly through error, reports only Mexicano. It is clear that in Papantla, Totonac has not yielded to Mexicano, as has been the case about Zacatlán; or to Mexicano and Otomí, as in Pahuatlán. In the Papantla area, the Totonac element still is substantial and probably will manage to hold its own for a good many years.

## HISTORICAL BACKGROUND

### ARCHEOLOGY

Since their discovery in 1785 (Gazeta de México, pp. 349–351), the ruins of Tajín have aroused the interest and admiration of all visitors, and a sizable bibliography has accumulated.[29] A study of local archeology is in itself a major undertaking, and, in large measure, our comments will be confined to a repetition of the conclusions which have been reached by other investigators.

In the immediate vicinity of the modern settlement of Tajín, the archeological ruins of that name are those of outstanding interest, because of their spectacular nature, their relative antiquity, and their external relationships. Apparently the occupation dates roughly from A. D. 600 (García Payón, 1947, p. 331), so was, at least in part, coeval with Teotihuacán. The Tajín center came to a violent end, presumably through conquest, about A. D. 1200, an approximate date which García Payón (1947, p. 305) assigns on the basis of ceramic association.[30] If we accept this dating, which appears reasonable, Tajín was destroyed a relatively few years after the abandonment, in 1156 or 1168 (Jiménez Moreno, 1942 b, p. 125), of Tula, the great Toltec site in modern Hildalgo.

Of the site of Tajín, only a relatively small part has been excavated; occupation was virtually continuous over a wide area, some of which still is forested. Moreover, surface sherds crop up in a number of clearings throughout the modern community, and sizable mounds still are half-hidden by the dense vegetation. Detailed and systematic surface collections have not been made in the immediate vicinity of Tajín, but it seems certain that sites later than the main ruin eventually will be recognized. In other words, although the main site was abandoned about A. D. 1200, the area as a whole was not. One plowed field, on the borders of Tajín, but actually within the political confines of adjacent Tlahuanapa, produces surface sherds whose painted decoration suggests affiliation with late wares from the nearby Huasteca.[31]

Of major archeological sites, Tajín is not the only one in the general vicinity of Papantla; García Payón mentions several others, as yet unexcavated. The famous Teayo, a few kilo-

[28] In 1804, Papantla was credited with a population of 2,837, of which 2,170 were Indians; 520, *gente de razón;* and 147, unspecified (Relaciones estadísticas de Nueva España pp. 44–45). In 1845, it was calculated that two-thirds of the inhabitants of the town of Papantla were Totonac (Bausa, p. 380).

[29] García Payón, 1943, has published a bibliography of works which touch directly and indirectly upon Tajín and the Totonac.

[30] Independently, Gordon Ekholm (letter of Oct. 29, 1948), gives the same tentative date.

[31] Ekholm (letter of Oct. 29, 1948) says that he has not studied this lot in detail, but his impression is that some of the "painted types . . . are as late as Period VI of the Huasteca, so . . . there is good possibility of post-building occupation around the site." DuSolier (pp. 7, 8, 41) also mentions decorated sherds of Huasteca type but considers them to be early and intrusive at Tajín.

meters distant, certainly has major bearing on any local historical reconstruction. Evidently it is not, as once was believed, an "Aztec" site, but one with perceptible Tula affiliations. Essentially later than Tajín, its precise dating has not yet been established (García Payón, 1947, p. 303; Ekholm, letter of Oct. 29, 1948). At the moment, it is impossible to say whether it was founded as a local Toltec colony prior to the fall of Tula, when the latter still was vigorous culturally, or whether it was settled by Toltecs who moved from the plateau when Tula was abandoned. In any case, the presence of such a Toltec-affiliated site at no great distance from Tajín indicates that major influences from a post-Teotihuacán horizon in the central highlands must have reached the Papantla zone.

Interpretation of the early phases of local archeology is closely linked to the so-called "Olmeca" problem, and there seems to be a general impression that the style of Tajín is related, directly or otherwise, to the "Olmeca" or La Venta culture. Covarrubias (1942, p. 48) sees a "distant but palpable" connection between the latter and the "so-called Totonac style." Caso (p. 46) goes so far as to say that "this great culture [Olmeca-La Venta] . . . . without doubt is the mother of other cultures, such as the Maya, the Teotihuacán, the Zapotec, that of El Tajín, and others."

Of more specific affiliations, some investigators feel that not only is Tajín in large part contemporaneous with Teotihuacán, but that the two cultures are intimately related, ceramically and architecturally (García Payón, 1947, p. 305). In fact, it has been suggested that the Totonac—either as a dominant group or as a slave element—were present during the building of Teotihuacán (Jiménez Moreno, 1942 b, p. 141; García Payón, 1943, p. 20). Krickeberg (pp. 141–145) has made a valiant effort to summarize Teotihuacán-Totonac relationships; more recently, Jiménez Moreno has investigated the problem anew, but his material has not been published. It is highly desirable that information concerning such a basic relationship be put on record, the more especially since the resemblances are not obvious, at least to us, and inasmuch as a considerable amount of archeological evidence has accumulated since Krickeberg's report was written.

Logically, the alleged Teotihuacán-Tajín resemblances are explicable, at least in part, by the La Venta background, which presumably underlies both cultures. La Venta provides a common bond—whether Teotihuacán and Tajín are regarded as distinct offshoots from the common cultural tradition, or whether Tajín is regarded as La Venta derived, via Teotihuacán. So much for the current views, in very general terms, concerning the basic affiliations of the Tajín archeological site.

Opinion is divided concerning the speech of the builders of Tajín. Naturally, there is no assurance that they were related linguistically to the modern Totonac; theoretically, the latter might well be recent intruders in a zone formerly occupied by peoples of other affiliation.

Nevertheless, the linguistic distribution is suggestive. The island of Huastec speech, just to the north of the Totonac, long has been recognized as of Mayan affinity. And for many years it has been suspected that the contiguous Tepehua and Totonac were related to each another (Starr, p. 264; Krickeberg, p. 28). Recently, this relationship has been verified (McQuown, p. 37). Moreover, McQuown repeats anew the old impression that Totonac may be allied to Maya. Concretely, he suggests that Totonac-Tepehua and Mixe-Zoque, which comprise the Totonac-Zoquean family, are in turn to be regarded as one of the major divisions of a super-Mayan, or macro-Mayance family.

In view of the above, the interpretation suggested by Jiménez Moreno (1942 a, b) appears plausible. Approaching the problem from the viewpoint of the "Olmeca," he has shown that a variety of peoples, at different times, have borne this name. He suggests that the earliest group, which he calls pre-Olmeca, is to be identified with the La Venta archeological horizon and with Mayoid speech. His next group, the proto-Olmeca, would be Totonac-Zoque in speech, and chronologically would correspond to the earlier occupations at Teotihuacán and Tajín. Successively, "Olmeca" refers to other groups of peoples, which do not, at the moment, concern us.

In summary, we seem to be dealing with a development which is centered along the Gulf coast. Culturally, it may be Olmeca-La Venta derived; linguistically, it presumably is macro-

Mayance. From this supposed substratum the modern Totonac have diverged widely. Years ago, before the Olmeca achieved their current vogue, Krickeberg (pp. 145–158) envisaged pretty much the same panorama and attempted to trace relics of a Mayan cultural substratum along the Gulf coast.

## LEGENDARY HISTORY

Of traditions concerning the early history of Totonacapan, no trace remains at Tajín, as far as we could determine. However, many of the old sources—mostly non-Totonac—contain references to the legendary history. Few mention the Papantla area specifically; several refer to Zacatlán, at one time a Totonac center in the Sierra de Puebla; and further data come from the modern Jalapa-Misantla area, in the State of Veracruz. Despite the fact that the sources are scattered and confused,[32] we shall attempt to formulate the picture for Totonacapan as a whole, relating the Papantla-Tajín area to it inferentially.

It has just been noted that the archeological evidence may be interpreted as implying close contact in remote times between Totonacapan and the central highlands; and legendary history, which starts with the Toltecs, similarly reveals relationships between coast and highland. For example, in their pre-Tula days, the Toltecs wandered extensively, reaching the "coasts and beaches" of the Gulf (Veytia 1: 153). Later, among other stops, they settled temporarily at Zacatlán, "Tuzapan" (near Papantla), and Tulancingo, before establishing themselves definitely at their great center of Tula (Veytia 1: 154–156), in the modern State of Hidalgo.

Their "empire" flourished, and the realm of Topiltzin, the last Toltec ruler at Tula, is said somewhat bombastically to have extended during its heyday "from one sea to the other" (Ixtlilxochitl 1: 88). But Topiltzin was an illegitimate son, and there were violent objections when he inherited the "Toltec empire," especially by three subject "kings" who were "from the provinces which lie on the coasts of the Gulf" (Ixtlilxochitl 1: 472).[33] Owing in part to the uprising of these dissenters, Tula was destroyed, in A. D. 1156 or 1168 (Jiménez Moreno, 1942 b, p. 125).

The surviving Toltecs scattered, some going to "Tozapan, Tochpan, Tziuhcoac y Xicotepec" (Ixtlilxochitl 2: 37). This brought them to the fringes of Totonacapan, in Tuxpan and in old "Tzicoac," and within its limits, in "Tuzapan," near Papantla, and in "Jicotepec" (modern Villa Juárez). Years later, it was said that there were surviving Toltecs "on the coasts of the South and North sea" (Ixtlilxochitl 1: 89). If the ruins at Teayo prove to be post-Tula, they lend credence to this legendary dispersal; in any case, they indicate a center of Toltec influence in the Papantla area.

Others of the Toltec survivors (generally called the Tolteca-Chichimeca) conquered Cholula, in the modern State of Puebla (Jiménez Moreno, 1942 b, p. 126; Kirchhoff, 1947, p. xxvii). At that time, Cholula was occupied by a people designated as "Olmeca." They were dislodged by the Toltec conquest and one group, called the Olmeca-Zacateca, migrated to Zacatlán, in northern Totonacapan; another, the Olmeca-Xicalanca, went to the southern coast of the Gulf of Mexico (Jiménez Moreno, 1942 b, p. 126; Kirchhoff, 1940, pp. 99–100). The conquest of Cholula still was not complete. Allies of the ousted Olmeca continued to battle with the Toltecs, and eventually the latter imported seven tribes of Chichimecs to assist them.

The Toltecs, weakened and scattered, ceased to play a major role, and there is no further reference to them in connection with Totonacapan. It is curious that the Totonac sources make no mention of the arrival of the Olmeca-Zacateca at Zacatlán. They report incursions by Chichimecs, but the culture of the latter was far too simple (Torquemada 1: 279) to permit identification with the Olmeca-Zacateca; moreover, as will be seen below, assuredly the Chichimecs were new-comers

[32] Manifestly, the ordering of these early data is a job for the specialist, but since none of the latter has published a general collation or interpretation, we have no choice but to struggle individually with the early sources. To reduce the inevitable confusion to a minimum, details such as personal names have been omitted from the text insofar as possible.

[33] In this connection, Ixtlilxochitl (1: 67) mentions specifically "Quiahuixtlan" and "Anahuacac." At the time of the Spanish Conquest, "Quiahuixtlan" was an important Totonac settlement on the coast near "Cempoala"; and Anahuac apparently is an old name for both the east and west coasts (Sahagún 2: 341, 354–355; Chavero, in Muñoz Camargo, ftn. 2, pp. 34–35; Siméon, in Chimalpahin, ftn. 3, p. 174) as well as for the Valley of Mexico.

However, Veytia (1: 189, 198) appears to place "Quiahuixtlan" and the rebel "kings" in western Mexico; he mentions "toda la costa del mar del Sur, hasta más adelante de Jalisco . . ." (cf. ftn. 27, map 17).

from the west or north. Nor can the Olmeca-Zacateca be identified with the original Totonac settlers[34] mentioned in the traditions quoted below, for their appearance on the scene was essentially late, subsequent to the fall of Tula. Such a possibility has been considered by Krickeberg (pp. 138–139) but discarded by him on linguistic grounds. Despite the silence of the Totonac sources concerning the Olmeca-Zacateca, it must be assumed, owing to the time element, that they moved to Zacatlán when the latter already was populated by the Totonac.

The identity of the Olmeca-Zacateca has been discussed by Jiménez Moreno (1942 b, pp. 127–129). He regards them as originally of Popoloca-Mixteca speech, profoundly influenced by Nahua, and suggests that their migration to Zacatlán may explain the presence of Nahuat[35] in that area today.

With the destruction of Toltec power and with the arrival on the scene of the Chichimecs, a new cycle of traditions is started; legendary history becomes somewhat fuller, and there are data from local sources, as well as from the central highlands. In them we find persistent mention of a Chichimec colonization, often described as an overlay on an earlier population.

Such an account comes from two pueblos, Cuautenco and Totutla, subject to Tetela, in the Sierra de Puebla. Although in the sixteenth century, both pueblos were Mexicano in speech, both reported an ancient Totonac substratum. Summaries follow:

*Cuautenco.* This pueblo was occupied by Totonac—so-called because "they came from where the sun rises"—over 763 years ago [that is, prior to 1581]. Then came four individuals who conquered the Totonac; they were the same as those who peopled Tetela; elsewhere (5:145) it is said that the settlers at Tetela were from the west, from a province of Chichimecs. Once subjugated by the intruders, most of the Totonac left; a few, with their wives, remained as subjects of the Chichimecs. The arrival of the latter was said to have taken place more than 363 years before [1581] (Paso y Troncoso 5:152).

*Totutla* informants made substantially the same statement. One of the descendants of the four Chichimec conquerors came to Totutla to find the site heavily populated "by a great quantity of people who today are called Totonac." For the latter term, the same derivation was given, also the same date for the original Totonac occupation. After the conquest, the Totonac withdrew gradually, but some remained and intermingled with the new settlers. Totutla informants placed the date of the Chichimec incursion at "more than three hundred years" before [1581] (Paso y Troncoso 5: 167–168).

In 1580, Totonac informants at Tlacolulan, near Jalapa, gave a somewhat similar account:

The original Totonac were four. They emerged from the sea and, as their numbers increased, they founded 13 settlements within a range of 6 leagues. This Totonac population enjoyed 400 years of peaceful existence before it was conquered by the Chichimecs. The latter occupied a dominant position for 109 years, until the arrival of the "ambassadors" of Moctezuma, to whom they gave tribute and "obedience." Mexican supremacy endured until terminated by the Spanish Conqu[illegible] (Paso y Troncoso 5:108).

In 1600, Torquemada (1: 281), who at one time was head of the Franciscan station in Zacatlán (3: 203), conferred personally with Totonac informants and recorded a distinct version (1: 278–280). Krickeberg (pp. 63, 133) is inclined to consider this tradition of scant importance, because it is essentially local and concerns a restricted area in the immediate environs of Zacatlán. Nevertheless, it seems to represent a sort of general pattern, which is applicable to much of Totonacapan. A summary of Torquemada's account follows:

The Totonac emerged from the famous site of Chicomoztoc, or Seven caves, in company with the Xalpaneca, leaving the Chichimecs within the cavern. They proceeded to Teotihuacán, where they remained sufficiently long to construct the Pyramids of the Sun and the Moon; they then continued to "Atenamitic," said to be at the site of historic Zacatlán.[35a] Four leagues beyond, they

[34] However, there is a suspicious similarity in the name of Ulmecatl, the chief of the Olmeca (Veytia 1:107) and Umeacatl, the chief of the original Totonac settlers at Zacatlán (Torquemada 1:278). But since the chief of another group, the Olmeca-Uixtotli, was called Olmecatl Uixtotli (Sahagún 3:139), it would appear that this calendar-derived name (translated Two-cane) enjoyed great popularity. It was also the name of the Mexican god of fiestas (Sahagún 1:35).

[35] That is, the form which uses "t" instead of the more common "tl."

[35a] We questioned about a dozen Zacatlán residents concerning "Atenamitic." Most did not recognize the word. However, two were under the impression that Atenamitli is an alternate name for the small archeological site generally known as San Pedro.

The site is a short distance upstream from modern Zacatlán and, like the latter, is perched perilously on the edge of the great barranca. It is said to be situated at the confluence of two tributary streams, the San Pedro and the San Miguel. Unfortunately, time did not permit first-hand inspection of the archeological zone, and we viewed it from the road, a few hundred meters distant. It apparently consists of a small artificial mound, topped by a cross, and adjacent are the ruins of what must have been a sizable masonry building, presumably colonial.

settled a particularly rugged spot, which appealed because of its defense possibilities.

From this site, called "Mizquihuacan" [modern San Francisco Ixquihuacán?], the Totonac spread until they peopled a great stretch of highlands and extended their domain to the coast. Tradition lists 10 generations of "chiefs," with succession from father to son. Each is said to have reigned precisely 80 years—a remarkable feat at which Torquemada marvels, at the same time assuring the reader that it has been "proved by very authentic and creditable histories."

During the term of the second chief, the Chichimecs appeared as a threatening cloud in the west and established themselves at "Nepoalco," 6 leagues from "Mizquihuacan."[35b] They were poor, naked, and ate raw meat. The Totonac received them kindly, instructed them in the arts of clothing themselves and of preparing their food. Amicable relations, thus established, continued for some centuries.

Following the death of the eighth Totonac chief, his two sons ruled jointly. But this dual arrangement was not successful; the Totonac were divided in their alliance and were weakened by civil war. The Chichimecs, now numerous, took possession of Totonac territory and from that time treated the Totonac as their "vassals and subjects."

The Chichimec dominance later was followed by Mexican control. Regardless, the Totonac line of "chiefs" was not forgotten. One of the brothers of the ninth generation left a son; and the son of the latter accepted Christianity, thus bringing the Totonac "dynasty" to the time of the Spanish Conquest.

Although at variance with respect to the origin of the Totonac, the Tlacolulan and Zacatlán accounts agree concerning Chichimec dominance, followed by Mexican conquest. In addition, the sixteenth-century *relaciones* both of Zacatlán and Misantla mention a Chichimec peopling of Totonacapan, although in this case, the Chichimecs apparently appear in the role of original settlers.

In short, several independent sixteenth-century sources record a Chichimec invasion of Totonacapan, without providing specific clues concerning the identity of the intruders. The term "Chichimec" is applicable to any Mexican people of nonsedentary, rustic culture (Mendieta 4: 188; Durán 1: 13; Muñoz Camargo, p. 28), not necessarily to a determinable linguistic or political entity. Sahagún (3: 120) indicates that the Chichimecs were of diverse speech, and the internal evidence suggests the same (Kirchhoff, 1947, pp. xxxi-xxxii). It seems pretty apparent that the term was applied successively to quite distinct peoples in the course of the centuries. As the earlier groups of Chichimecs absorbed the culture of the sedentary populations with which they came in contact, the designation no longer was applicable and was used, in turn, to indicate other nomadic peoples.

However, it is evident from non-Totonac sources that the Chichimecs in question—or at least one group of those in the Zacatlán zone—are to be identified with the followers of Xolotl, a semilegendary leader who founded a long dynasty, first at Tenayuca and later at Texcoco, in the Valley of Mexico.[36]

Once established at Tenayuca, Xolotl extended his power to "Tenamitic," which is the "Atenamitic" of Torquemada (Boban 1:75; Radin, p. 41); and his two grandsons[37] took possession of "Tenamitic" and Zacatlán respectively (Boban 1:109; Ixtlilxochitl 1:97, 104, 269, 475, 2:45; Torquemada 1:63; Veytia 1:258–259). At the same time, the Chichimecs apparently occupied Huauchinango, which was at least in part Totonac during the sixteenth century, as well as other pueblos in the same general area, but outside the bounds of Totonacapan (Torquemada 1:45).

Supposedly, the Chichimecs of Xolotl were of Otomian speech (Jiménez Moreno, 1942 b, p.

[35b] Below Zacatlán, at a point just upstream from Axaxalpa, the east slope of the great barranca is known today as Nepopualco. The latter cannot be identified with Torquemada's "Nepoalco," provided we are correct in suggesting that "Mizquihuacan" is to be identified with modern Ixquihuacán. Torquemada places "Mizquihuaçan" 4 leagues from Zacatlán and 6 from "Nepoalco." Ixquihuacán is slightly less than the specified 4 leagues but is, at most, a league from modern Nepopualco.

[36] Traditionally, the Chichimecs came out of the north. The original seat of Xolotl apparently was located in the Huasteca, immediately north of Totonacapan, and his wife, Tomiyauh, was designated as "Señora de los Cuextecos" and "Señora" of the provinces of "Panuco, Tampico y Tamiyauh" (Ixtlilxochitl 1: 268, 277). In this identification Veytia (1: 229, 245) concurs.

[37] Ixtlilxochitl is not consistent in the naming of these two grandsons. The one who became leader at Zacatlán he calls, upon different occasions: Toxtequihuatzin, Totzin, Atencatzin, and Huixaquen (1:97, 104, 269; 2:45). Similarly, his first Chichimec ruler at "Tenamitic"is named: Apotzoctzin, Toxtequihuatzin, Tloxtequihuatzin, and Cozanatzin.

Ixtlilxochitl apparently contradicts himself concerning Toxtequihuatzin. Despite his assortment of names, none of the latter agrees with that given by Torquemada (1:280) for the first Chichimec ruler at Zacatlán, namely Xihuitlpopoca. However, much later, Ixtlilxochitl (1:136) lists Xihuitlpopoca as "Señor de Zacatlan"—not in the days of Xolotl, but at the beginning of the reign of Techotlalatzin, the fifth Chichimec ruler.

The discrepancy between the two sources may be chiefly one of time, attributable perhaps to the short memory of Torquemada's informants. Or it may be that the Chichimec conquest was not really effective until many years following the death of Xolotl.

26).[38] In any case it would appear that they were not Nahuan. For example, the son of Xolotl, upon meeting a stray Toltec in the Valley of Mexico, was forced to communicate with him by signs (Torquemada 1:44). Probably it is safe to assume that the Toltecs were Nahuan. Sahagún (3:115) states so definitely, and it is said that the two languages used generally in all the "Chichimec empire" were "*Tulteca*, which is called *Mexicana*," and "Chichimeca" (Ixtlilxochitl 1:82). Allegedly, the Chichimecs did not speak Mexicano generally until the time of Techotlalatzin, their fifth ruler (Ixtlilxochitl 2:73).

These early Chichimec invaders, supposedly Otomian, were reinforced by the arrival of a subsequent (Torquemada 1:258, 261) group, usually called the Teochichimecs. Torquemada (1:261) says flatly that they were "those whom nowadays are called Otomi."[39] Nevertheless, it appears that the Teochichimecs, like the earlier Olmeca-Zacateca, became Nahuatized. Sahagún (3:116) has them acquire both the Otomí and Mexicano languages; Chavero (in Muñoz Camargo, ftn. 4, p. 55) concludes that the original Teochichimecs were not Nahuan but that they learned the language through contact with Mexicano-speaking peoples. Such a situation might be significant in explaining the bilingual character of Totonacapan at the time of the Discovery, for the Teochichimecs settled various pueblos, which, a few centuries later, were within Totonac territory. These included "Tuzapan," Papantla, "Tonatico," Chichilintla, Nautla, "Cempoala," and Talpan (Torquemada 1:262, 264, 269).

Torquemada (1:264) identifies the Teochichimecs with the Chichimecs who conquered the Totonac realm about Zacatlán and "Tenamitic." Since he does not distinguish two waves of invaders in Zacatlán, it must be assumed that the two groups—possibly allied in speech and in cultural antecedents—became amalgamated. It seems highly probable that the Chichimec invasion—if not the immediately subsequent Teochichimec incursion—accounts for the presence in historic times of the small island of Otomí speech just south of Zacatlán (Orozco y Berra, 1864, map facing p. 392).

The conquest of Zacatlán must date from the late twelfth or early thirteenth century. The 1581 informants at Cuautenco and Totutla, near Tetela, placed the arrival of the Chichimecs in the Sierra de Puebla during the thirteenth century (Paso y Troncoso 5:152, 168). Although the dating is approximate, it agrees with other evidence. Xolotl and his band moved into the environs of the Valley of Mexico following the fall of Tula (in A. D. 1156 or 1168), for they found the site already in ruins (Ixtlilxochitl 1:83; Torquemada 1:42). Ixtlilxochitl (1:84, 474) would have them arrive 5 years after the destruction of Tula. The second group, the Teochichimecs, appeared on the scene shortly thereafter.

In other words, the arrival of these invaders in west Totonacapan accords surprisingly well with the date (between A. D. 1180 and 1230) calculated for the destruction of the ancient center of Tajín (García Payón, 1947, p. 305). Apparently there is no mention of the Papantla area in connection with the Chichimecs of Xolotl; but the Teochichimecs are said to have peopled a great stretch of country, and among their settlements, Torquemada (1:262, 269) twice mentions "Tuzapan" and Papantla. Perhaps then the destruction of Tajín is attributable to the Teochichimecs rather than to the Chichimecs of Xolotl, although the difference is slight if, as suggested above, the two groups became fused at Zacatlán.

In summary, tradition indicates that the Toltecs were not without ties in Totonacapan—ties which are confirmed by the Tula-affiliated site of Teayo, not far from Papantla. In the years following the fall of Tula and the destruction of Toltec power, the population of a great part of Mexico seems to have been extraordinarily fluid. Legends record mass migrations from one area to another, and with each settlement of immigrants, dislocation of earlier inhabitants.

In the Zacatlán region of the Sierra de Puebla alone, there is recorded the arrival of three immigrant groups, evidently within the span of a few years following the destruction of Tula. Here, the early Totonac population was overrun by the Nahuatized Olmeca-Zacateca; shortly thereafter, by the apparently Otomian Chichimecs of Xolotl;

[38] At least one group of later immigrants which affiliated itself with Xolotl is said to be Otomí (Boban 1:76; Ixtlilxochitl 1:94; Veytia 1:254); but Ixtlilxochitl (2:41) considers their language "very strange and different."

[39] Elsewhere (1:258), Torquemada adds to the confusion by stating that the Teochichimecs came in search of "los primeros Chichimecas, Aculhuas, Tepanecas, Chalmecas, Hulmecas, y Nicalancas, Deudos, y Parientes suios."

and, on their heels, by the Teochichimecs, who either were Otomí, or Otomí who had become Nahuatized.

On the whole, these traditions accord relatively well with the distribution of native speech in the Zacatlán area and may, in part, explain the presence of Mexicano cheek by jowl with Totonac in much of Totonacapan at the time of the Discovery. Morover, the supposed date of the Chichimec-Teochichimec incursions accords well with that given by archeologists for the destruction of ancient Tajín. In a broad sense, therefore, there is indirect confirmation of legendary history.

Unfortunately, the Papantla-Tajín zone, which interests us most, seldom is mentioned specifically in connection with these movements of peoples. There are traditions of temporary Toltec settlement at "Tuzapan," in the lowlands near Papantla. And the Olmeca-Zacateca also may have reached "Tuzapan."[40] It is impossible to say how widespread were the effects of the Olmeca-Zacateca migration in Totonacapan. At the time they left Cholula, the related Olmeca-Xicalanca moved southeast to the Gulf coast, but apparently their route lay well to the south of Totonacapan.

The succeeding migration, that of the Chichimecs of Xolotl, cannot be associated directly with the Papantla-Tajín zone, but was concentrated about Zacatlán, in the Sierra de Puebla. Unidentified Chichimec conquerors settled Cuautenco and Totutla, near Tetela, likewise in the Sierra do Pueblo; Tlacolulan, near Jalapa; and Misantla.

The next group of intruders, the Teochichimecs, pushed into the lowlands and peopled Papantla and "Tuzapan"; they also occupied "Tonatico," Chichilintla, Nautla, "Cempoala," Jalpan, and Metztitlán (Torquemada 1:262, 264, 269).[41] Metztitlán definitely was non-Totonac. The other pueblos were included in sixteenth-century Totonacapan, although before the Spaniards arrived on the scene, the Triple Alliance had established a garrison at Nautla.

The Chichimec-Teochichimec incursions not only penetrated Totonacapan, but also extended far beyond its bounds. According to Ixtlilxochitl (1:88, 474), the territory of Xolotl, the first Chichimec leader, included parts of the Huasteca, as well as the hinterland of Totonacapan, about Perote (Poyauhtecatl; Torquemada 1:262). The Teochichimecs, from their base in Tlaxcala, settled Jico (old "Xicochimalco"), southwest of Jalapa, beyond the limits of Totonacapan; and, together with the Aculhua, they peopled "Cohuatçaqualco, Cempohuallan . . . y toda la Huaxteca de Panuco" (Torquemada 1:263, 269). Torquemada's combined statements, together with those of other sources, would have Chichimecs and/or Teochichimecs scattered throughout Totonacapan and established, to boot, in an area just to the south (Jico and Coatzacoalcos) and immediately to the north (Pánuco), as well as in the hinterland.

Under the circumstances, it seems logical to conclude that at one time or another, virtually all of Totonacapan was affected by successive waves of invaders and that the modern Totonac—probably in blood, in culture, and perhaps in language—represent the fusion of an old population with subsequent invaders. Under the circumstances, the chances of a perceptible survival of the early Olmeca-La Venta culture among the modern Totonac are pretty slim (Mayas y Olmecas, p. 81).

## MEXICAN CONQUEST

Before the Discovery by the Spaniards, Totonacapan was subjected to still another conquest, namely that of the Mexica. Essentially late, this conquest seems to have been largely political and commercial. There is no mention of actual settlement, although garrisons were established at key points; and the Mexicans appear to have concentrated their efforts on collecting tribute.

[40] Kirchhoff (1940, map 4) carries this group as far northeast as "Tuzapan" presumably on the authority of Muñoz Camargo. However, in the latter source we have been unable to find any statement which would warrant such interpretation.

[41] Muñoz Camargo (p. 45) describes this same colonization, attributing it to the "Chichimecs"—a term under which he cozily and ambiguously unites Tolteca-Chichimeca, Chichimec, and Teochichimec (Kirchhoff, 1940, p. 98). His use of the same term for quite distinct groups of peoples results in pitfalls for the unwary, for which reason we have not dared rely very heavily on his data.

In this particular case, however, he evidently is speaking of the peoples whom Torquemada calls Teochichimec. He mentions precisely the same pueblos, and in the same order, from which it may be guessed that Torquemada copied from him. Chavero (in Muñoz Camargo, ftn. 1, p. 19) indicates another passage which Torquemada presumably lifted from the same source.

Both authors date from the late sixteenth century, with Muñoz Camargo probably somewhat earlier. Carrera in Díaz-Thomé et al., p. 103) believes that he wrote between 1576 and 1595; Veytia (1:287) places the date about 1585. We have not been able to discover when Torquemada started work on the history to which he is said to have devoted 20 years (Clavijero 1:29), but he himself states that his Totonac data were recorded in 1600. The first edition of Torquemada appeared in 1614 (Clavijero 1:29) or in 1615 (Beristain 3:185).

With the Mexican conquest of Totonacapan, we emerge from the realm of pure tradition, for the Mexica were in nominal control of Totonacapan when the Spaniards arrived. Moctezuma's tribute collectors were to be found all along the Gulf coast and, as a matter of fact, descended upon "Quiahuixtlan," precisely at the time the Spaniards were being entertained royally by the Totonac of that pueblo.

### ANTECEDENTS

Following the aggression of the Chichimecs and Teochichimecs, Totonacapan seems to have enjoyed relative freedom from highland pressure for approximately 200 years, that is to say, until the middle of the fifteenth century. At least, the ancient sources make scant mention of Totonacapan during that time. This is understandable, for these are precisely the years when the balance of power in the Valley of Mexico was being established—the years which saw the long struggle for supremacy between Azcapotzalco and Texcoco; the years when the Mexica were beginning to come into their own; the years when the so-called Triple Alliance between Mexico, Texcoco, and Tacuba was born. It is clear that the peoples of the Valley of Mexico were amply occupied with local problems.

Moreover, these two centuries of relative peace must have been years of adjustment in Totonacapan; years when the recent Olmeca-Zacateca and Chichimec-Teochichimec invaders were absorbed; years during which the culture we know as Totonac was formed. Too, it was the time when "Cempoala," the sixteenth-century Totonac center on the coast of Veracruz, grew to importance, having been founded approximately at the time Tajín was destroyed (García Payón, 1947, pp. 331, 332). All told, the silence of the ancient sources concerning highland-coast relationships during this period probably is not the result of oversight; the internal evidence suggests major activity localized in the Valley of Mexico and, at the same time, a period of adjustment and advance in Totonacapan.

During this era, Tlaxcala emerged as a power in the central highlands. As at Cholula, its early population was called Olmeca ("Hulmecas, y Çacatecas"; Torquemada 1:263). It was dislodged, but in this case, by the Teochichimec invaders, who established themselves at Tlaxcala and who thereafter were known as the Tlaxcalteca. Tlaxcala appears to have played a minor role until the days of Netzahualcoyotl (1431–72), a famous Chichimec ruler at Texcoco, at which time it appeared as his supporter and ally (Ixtlilxochitl 2:140, 195, 203).

Perhaps the common Teochichimec background at Tlaxcala and in parts of Totonacapan contributed materially to amicable relations between these two provinces. But whether or not it was based on a feeling of affinity, it is clear that a long-enduring friendship existed,[42] as well as a sprightly commerce. When, finally, the Triple Alliance undertook the conquest of Totonacapan, there was a further bond between Tlaxcala and Totonacapan: enmity toward the Mexicans.

There is no record of a Tlaxcalan conquest of Totonacapan.[43] Relationships appear to have been basically commercial, although there are several indications of military commitments (as, for example, in the Cotaxtla campaigns, which will be mentioned later). Owing to its limited natural resources, Tlaxcala was obliged to look to the lowlands for certain merchandise: gold, cacao, cotton, honey, wax, feathers, and salt (Muñoz Camargo, pp. 105, 111). To obtain these products, its merchants trafficked from the Gulf to the Pacific. At first, they traded side by side with the Mexicans, on amicable terms. Later, acute rivalry developed (Muñoz Camargo, pp. 105–108), with Totonacapan and other coastal provinces a chief bone of contention. Torquemada[44] states flatly that the main reason for the Mexican conquest of the lowlands was the disruption of Tlaxcalan commerce.

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[42] A friendship which endured through the Spanish Conquest and which was of utmost importance to Cortés, who exploited it thoroughly.

The only hint of friction between Tlaxcala and Totonacapan is found in a statement, made in 1581, by informants at Zacatlán. According to them, Moctezuma aided them in their wars with Tlaxcala (Relación de Zacatlán).

[43] Muñoz Camargo (p. 70; repeated by Torquemada 1:161, 269) makes grandiose statements concerning the Tlaxcalan settlement of a great part of Totonacapan and adjacent zones. This we have interpreted as applying to an early Teochichimec occupation, pre-Tlaxcalan, in the strict sense of the word. But if Muñoz Camargo chooses to identify the Tlaxcalans with their Teochichimec forbears, as apparently he has done, he might justifiably make such a claim.

[44] ". . . procuraron de apoderarse de toda la Totonacapan, y de las provincias de los Tohueios, Xalapanecas, Nauhtecas, Mexcaltçincas, y otras muchas que caen, âcia la Costa, y Mar de el Norte que son muchas, solo, á fin de impedir la entrada, que podian hacer estos Tlaxcaltecas, en ellas, estorvandoles las Contrataciones, y Grangerias, que tenian en todas estas Tierras" (Torquemada 1:198).

During this same era of peace in Totonacapan, when the Tlaxcalans were developing a profitable trade in that province, Texcoco also came into the picture. If Tlaxcala shared a common Teochichimec tradition with Totonacapan, Texcoco could claim a joint Chichimec bond. The ruling family at Texcoco was Chichimec—lineal descendants of Xolotl, the Chichimec ruler, who conquered and settled the Totonac zone about Zacatlán.

By the time that Mexican designs were directed toward Totonacapan, Texcoco already held several key towns on its fringes. Since the days of the first Chichimec rulers, Tulancingo was considered their property; it is mentioned frequently, chiefly because it revolted with monotonous regularity (Torquemada 1:66; Ixtlilxochitl 1:287, 2:196, 199). Likewise, Texcoco apparently counted among her possessions Huauchinango (Ixtlilxochitl 1:136, 2:196), "Jicotepec" (now Villa Juárez) (Ixtlilxochitl 2:177, 196), Pahuatlán, Tlacuilotepec, and Pápalo (Torquemada 1:167)—all of which contained elements of Totonac speech during the sixteenth century.

Moreover, when Netzahualcoyotl, the Chichimec ruler of Texcoco (1431–72) subdued Tulancingo, Huauchinango, "Jicotepec," and "all the sierra of Totonapan [Totonacapan]," it was said that this terrain was part of his patrimony (Ixtlilxochitl 2:196), presumably implying Chichimec heritage. The same claim was made with respect to the alleged conquest [45] by Netzahualcoyotl of Tuxpan and "Tzicoac," two important pueblos in the Huasteca.

In any event, it is clear that Texcoco held the three key towns of Tulancingo, Huauchinango, and "Jicotepec." During the sixteenth century, the two latter were in part Totonac; all three lay on the main route to northern Totonacapan, and through them there was easy access to the southern Huasteca. Moreover, Texcoco controlled a scattering of towns on the northwest borders of Totonacapan and evidently continued the old Chichimec grasp of the highland Totonac country about Zacatlán (Ixtlilxochitl 2:196).

The stage now was set for the Mexican conquests. Under early leaders, the Mexicans participated in combats on the fringe of Totonacapan—presumably not independently, but as vassals of Azcapotzalco. However, under Itzcoatl (1427–40), the Mexicans gained their independence, and the famous Triple Alliance was formed, with Tenochtitlan, Texcoco, and Tacuba as collaborators. Mexican expansion started, but not until the elder Moctezuma succeeded Itzcoatl are there records of campaigns which affected Totonacapan directly. Below is a brief summary of such Mexican conquests, and a much more detailed account appears in Appendix B.

### MOCTEZUMA I (1440–69)

The first great era of Mexican expansion toward the Gulf took place during the reign of the elder Moctezuma, whose aggressions in that zone comprised three major campaigns—one in the Huasteca, and two in the area of Cotaxtla—the former on the northern and the latter on the southern frontier of Totonacapan.

With his campaign in the Huasteca, Moctezuma established a wedge of Mexican influence just north of Totonacapan; but his conquests were far from enduring, and his successors had to resort to frequent junkets to quell rebellions. Despite proximity to northern Totonacapan, there is no indication that the latter was directly affected.[46] In fact, it is quite clear that Papantla, for example, was able to maintain independence until half a century later, when it was subjugated by the younger Moctezuma (p. 23).

Southern Totonacapan did not fare as well, and as a byproduct of Moctezuma's first campaign against Cotaxtla, its important centers—"Cempoala," "Ozeloapan," and "Quiahuixtlan"—came under Mexican rule. Cotaxtla revolted recurrently thereafter, both during the reign of Moctezuma and subsequently, but there is only passing mention of Totonac participation (Tezozomoc,

[45] Alleged conquest, because it appears that this campaign was of the Triple Alliance, not of Texcoco personally. Perhaps "Tzicoac" and Tuxpan, where Netzahualcoyotl placed his tribute collectors (Ixtlilxochitl 2:196–197), represented his share of the joint booty. In any case, an impartial source (Códice Chimalpopoca, p. 64) states that during the reign of Netzhualcoyotl and that of his successor, Pantlan was part of the Texcocan realm; and Pantlan is an old alternate name for Pánuco-Huasteca (Sahagún 3:130).

[46] In addition, four pueblos whose identification is problematical, may have lain on the peripheries of northern Totonacapan (ftn. 36, p. 268). None of these appears to have been Totonac, and we find no evidence to suggest that northern Totonacapan as a whole came under Mexican hegemony at this time, as Barlow (1947 a, map 4) appears to contend.

p. 142). The initial conquest of southern Totonacapan apparently was enduring.

### AXAYACATL (1469–81) AND TIZOC (1481–86)

Moctezuma's successor, Axayacatl, indulged in a series of scattered conquests, some in the Gulf coast area. He quashed a rebellion in Cotaxtla and, apparently toward the end of his reign, another in the Huasteca. But southern Totonacapan continued under Mexican control and northern Totonacapan still was inviolate.

Tizoc, the successor of Axayacatl, was not particularly successful as a military leader. He apparently subdued Cotaxtla and the southern Huasteca anew, but there is no evidence that Totonacapan was directly concerned. His other campaigns were not directed toward the Gulf.

### AHUIZOTL (1486–1502)

Ahuizotl was extremely active, and although he extended Mexican conquests far to the south (map 17, Appendix B), he still found time to conduct a number of campaigns in the Huasteca. In the course of one of these, the Totonac pueblo of "Tuzapan" succumbed (p. 275).

During his reign, further penetration of Totonacapan seemingly took place, with the conquest of Nautla, on the Gulf coast. However, this victory is mentioned only by Texcocan sources, which claim the conquest for their ruler, Netzahualpilli.

Cotaxtla appears to have been at peace, but the nearby pueblo of "Mictlanquauhtla" was subjugated. This conquest, together with those of "Tuzapan" and Nautla, suggests fairly extensive military action along the east coast; but the sources give no further details.

### MOCTEZUMA II (1502–20)

The younger Moctezuma continued the program of expansion, especially toward the south (map 18, Appendix B). During his reign, the Huasteca appeared to enjoy a respite, but northern Totonacapan suffered in its stead. The Mexican sources list among his conquests, only two Totonac pueblos, Pantepec and "Jicotepec," on the northern and northwestern limits of the province. But others indicate that it was the younger Moctezuma who subjugated Papantla, as well as a whole series of Totonac pueblos, in a large block north of Jalapa, and farther west, in the Sierra de Puebla (map 18, Appendix B).

A few scattered Totonac settlements may have escaped the Mexican yoke—for example, Tuzamapan and Ayotoxco, near Jonotla (p. 279). But by and large, before the reign of Moctezuma terminated, virtually all of Totonacapan, both northern and southern, was under Mexican control.

### NATURE OF THE CONQUEST

From early times, Totonacapan seems to have been a province wide open to invasion. Papantla claimed to have given battle to the forces of the younger Moctezuma, as did Chiltoyac (p. 279), and the establishment of Mexican garrisons in Totonacapan implies a certain amount of active opposition. Moreover, Ixtlilxochitl (2:332) speaks of frequent uprisings, particularly in Totonacapan, during the reign of the younger Moctezuma.

Nevertheless, on the whole, the sources give the impression that the Totonac were far from bellicose and that they met successive intrusions with little more than passive resistance. Except for the rebellions against Moctezuma II, we find only one reference to aggressive warfare on the part of the Totonac, and, unfortunately, the passage is obscure to us. It refers to Totonac and Huastec who, bearing a white standard, fought naked, in Zumpango, during the reign of the elder Moctezuma (Códice Chimalpopoca, p. 54).

It may be suspected that the relatively late impacts with the expanding Mexican Empire left little cultural imprint in Totonacapan. The conquest appears to have been essentially military and political, with predominant emphasis on the payment of tribute. There is no mention of colonization from the central highlands at that time; but, in contrast, the earlier intrusions of the Toltecs, the Olmeca-Zacateca, the Chichimecs and the Teochichimecs involved actual settlement either on the borders of Totonacapan or within the province (pp. 16–20). Moreover, in time of famine, the highland folk not only went to Totonacapan for maize, but entire families settled there; and the Totonac took advantage of the situation to acquire slaves from the Valley of Mexico (p. 7). This sort of infiltration involves more intimate contact and presumably has more lasting influence than does a nominal conquest. In other words,

we suspect that highland influences found in Totonacapan antedate the Mexican conquest.

## DISCOVERY

Although the Spanish discovery of Totonacapan is part and parcel of the discovery of New Spain, we shall confine ourselves to a sketch of events which bear directly on the Totonac area.

### ANTECEDENTS

From the arrival of the Spaniards in the New World, the Antilles, and especially Santo Domingo, became the base for subsequent explorations. At that time—during the late fifteenth and early sixteenth centuries—the Spaniards still were more interested in a sea route to the Orient than they were in local conquest and colonization. Stimulated by the success of Portuguese navigators, who followed the route to the east, along the African coast, the Spaniards made frequent explorations to the west and south of the Antilles (cf. Pereyra). It is quite possible that these trips led to knowledge of the coast of the Gulf of Mexico prior to the expeditions of 1517, 1518, and 1519, headed respectively by Hernández de Córdoba, Grijalva, and Cortés, inasmuch as several earlier European maps (Juan de la Cosa, 1500; Stobnicza and Ptolemy, 1513) depict the Gulf coast with considerable precision, although far from completely.

Antón de Alaminos—erstwhile companion of Columbus and pilot for Hernández de Córdoba—is said (Díaz del Castillo 1: 65) to have guided the latter by maps on his return from Yucatán to Cuba, via Florida. However, probably as a survival of the ideas of Columbus, Alaminos still believed that Yucatán was an island (Díaz del Castillo 1: 63). It is evident that if he had maps of the Gulf, assuredly he did not use those mentioned previously—above all, that of Juan de la Cosa, since no break to the west is indicated along the coast (Pereyra 1: 162,163).

In any case, it would appear that the Gulf coast was known prior to 1517. Among modern historians, both Pereyra (1: 173, 174, 195–201) and Toussaint (p. 69) are inclined to credit the discovery to a voyage made between 1497 and 1498 by Americus Vespucci, Vicente Yáñez Pinzón, and Juan Díaz de Solís. Moreover, in agreement with Varnhagen and Fiske Toussaint (p. 70) believes that the voyagers landed in the Huasteca, because of certain ethnographic and ecological details contained in one of Vespucci's letters.

Subsequent to this hypothetical discovery, on his fourth and last voyage (1502), Columbus touched the coast of Nicaragua, without, however, penetrating the Gulf of Mexico. Later, in 1512, the survivors of a shipwreck reached Yucatán, where they were sacrificed by the Maya, with the sole exception of Gonzalo de Guerrero and Jerónimo de Aguilar. The latter, rescued in 1519, was promptly attached to the party of Cortés. Moreover, in 1515, the northern coasts of the Gulf were explored by Ponce de León.

In summary, it may be said that between 1497 and 1515, various voyages gave the Spaniards a more or less exact knowledge of the Gulf coast and even a certain amount of contact with the inhabitants. There is, however, no indication of any encounter, at such an early date, between the Spaniards and the Totonac. We may guess that the presence of Spanish ships in the Gulf and fleeting contacts with their occupants, may have given rise to feelings of uneasiness among the native peoples, which may have been translated into the revival of the myth of Quetzalcoatl and in the predictions of his imminent return.

### HERNANDEZ DE CORDOBA AND GRIJALVA

About 1517 the situation became difficult for the majority of the Spanish residents in the recently conquered island of Cuba. Only a small part of them had obtained Indians and lands, and the dissatisfied ones decided to try their luck elsewhere (Díaz del Castillo 1: 52). This was the origin of the expedition of Hernández de Córdoba, the real discoverer of Yucatán. Unhappy encounters with its natives moved the party to return to Cuba, having proceeded first to Florida. The course of the journey does not suggest, however, any possible contact with Totonacapan—nor even knowledge of its coasts.

The booty which the travelers brought back to Cuba, as well as the word of an abundance of precious metals, stimulated the Governor of Cuba, Diego Velázquez, to promote new explorations. A year later, in 1518, a new expedition set forth, under the leadership of Grijalva.

Grijalva's course was substantially the same as that of Hernández de Córdoba, but he continued

from the point where the latter had left off, and reached the island of San Juan de Ulúa, opposite the shores of the present city of Veracruz. He remained 7 days in that spot, while "the Indians of nearby towns came to trade their gold and jewels" with the Spaniards' stores (Díaz del Castillo 1:87). At this point, the Spaniards were very close to Totonac terrain, and if the Totonac were not among the traders, at least, it seems likely that they were aware of the arrival of the strangers.

Grijalva continued his trip northward, along the coast, passing what apparently is modern Tuxpan, and reaching a large river which the party named Río Canoas.[47] At the mouth of this river, the Spaniards were attacked by natives in canoes before they continued north, to reach "a very large point, difficult to skirt and with many currents," for which reasons they did not proceed further (Díaz del Castillo 1:90).

The identification of the so-called Río Canoas and of the large point of land has aroused discussion. Toussaint (pp. 72–73) suggests that the river is the mouth of the lake of Tamiahua and that the point is Cabo Rojo. In any event, there is no doubt whatsoever that the expedition of Grijalva ran the full length of the coast of Totonacapan, from south to north, and, on the return journey, from north to south.

### CORTES

The circumstances which made Hernán Cortés chief of the new expedition are well known. We shall not consider them, nor the incidents of travel as far as San Juan de Ulúa where, following Grijalva's example, Cortés established a base camp on the mainland. Nevertheless, the aims of Cortés were quite distinct from those of his predecessor. Far from being satisfied with barter, he did not conform to his instructions from Diego Velázquez and converted his expedition into an extraordinary enterprise of conquest.

The Spaniards had settled themselves in a zone which was in sharp dispute among the native peoples. Nevertheless, at that moment, Mexican supremacy was undisputed, and the strangers were received by representatives of Moctezuma the younger. Among them was the Governor of Cotaxtla, who was in charge of a group of tributary pueblos, some in the immediate vicinity of San Juan de Ulúa (Colección de Mendoza 5:84).

With this meeting, the long diplomatic struggle between Cortés and the envoys of Moctezuma began. The former insisted on proceeding to the court of the Mexican rulers; the latter tried to persuade him to remain on the coast. The situation became tense. Provisions, with which the Spaniards had been generously provided at first, were all but cut off; the natives no longer visited the camp; and an attack was feared. To crown the difficulties, the bay of San Juan de Ulúa proved inadequate for the fleet, and the camp site turned out to be unhealthful.

In a few dramatic pages, Díaz del Castillo (1:156–160) describes the situation and the discouragement which made the men eager to return to Cuba. During these trying circumstances, two incidents proved decisive for the Conquest: the discovery of the town of "Quiahuixtlan" and the arrival at the Spanish camp of a group of friendly messengers sent by the chief of the Totonac center of "Cempoala." This is the first actual contact between Spaniards and Totonac of which we have record and it is depicted graphically by Díaz del Castillo.[48]

With amicable relations established between the Totonac and the Spaniards, the difficult position of Cortés and his troops changed radically. A few days following the meeting, the party moved to "Cempoala" where, instead of being in hostile

[47] ". . . vimos las sierras que se dicen de Tuxtla, y, más adelante, de ahí a otros dos días, vimos otras sierras muy más altas, que ahora se llaman las sierras de Tuxpa . . . Y yendo nuestra derrota vimos muchas poblazones, y estarían la tierra adentro, al parecer, dos o tres leguas . . . llegamos a uno río grande y muy corriente, que le pusimos nombre río de Canoas . . ." (Díaz del Castillo 1:90).

[48] "Y un día, estando yo y otro soldado puestos por espías en unos arenales, vimos venir por la playa cinco indios, y por no hacer alboroto por poca cosa en el real los dejamos llegar a nosotros, y con alegres rostros nos hicieron reverencia a su usanza, y por señas nos dijeron que los llevásemos al real. Yo dije a mi compañero que se quedase en el puesto, y yo iría con ellos, que en aquella sazón no me pesaban los pies como ahora que soy viejo. Y desde que llegaron adonde Cortés estaba, le hicieron gran acato, y le dijeron *Lope luzio; lope luzio,* que quiere decir en lengua totonaque: "Señor, y gran señor." Y traían unos grandes agujeros en los bezos de abajo, y en ellos unas rodajas de piedras pintadillas de azul, y otros con unas hojas de oro delgadas, y en las orejas muy grandes agujeros, en ellas puestas otras rodajas con oro y piedras, y muy diferente traje y habla que traían que la de los mexicanos que solían estar con nosotros. Y como doña Marina y Aguilar, las lenguas, oyeron aquello de *Lope luze,* no lo entendían. Dijo la doña Marina en la lengua de México que si había allí entre ellos *nahuatlatos,* que son intérpretes de la lengua mexicana, y respondieron los dos de aquellos cinco que sí, que ellos la entendían, y dijeron que fuésemos bien venidos . . ." (Díaz del Castillo 1:160).

isolation, surrounded by Mexicans, the Spaniards now were among friendly people and could count on abundant food, good quarters, and healthful surroundings.

At the same time, the discovery of "Quiahuixtlan" by Montejo—sent with two of Cortés' pilots to explore the coast—resulted in the location of a good anchoring adjacent to Totonac territory, and the fleet was moved to this haven.

Once in new and more secure surroundings, the Spanish conqueror was able to formulate plans which on the sandy shores of San Juan de Ulúa had appeared impossible. In the course of his conversations with the Totonac, Cortés had come to realize the precariousness of the Mexican conquest, and he now felt that it was feasible to move inland to the court of Moctezuma. It is no exaggeration to claim that the attitude of the Totonac sealed the fate of the Mexican Empire and the destiny of Hernán Cortés as definitely as, later, Tlaxcalan loyalty to the Spaniards was to make possible ultimate victory following the disaster of the *Noche triste*.

### CONQUEST

The Spanish conquest of Totonacapan is almost unique in that the Totonac were received into the Spanish empire as allies, that is, as subjects incorporated into the empire through the will of their own native leaders. This is particularly true with respect to southern Totonacapan; the northern coast and the highlands were taken over by the Spaniards following the defeat of Moctezuma and the surrender of Cuauhtemoc. But the use of military force against the Totonac, in all of Totonacapan, is recorded only for the pueblo of Almolonga (Paso y Troncoso 5:118), which rebelled during the siege of the Mexican capital. In short, the conquest of Totonacapan was singularly free from the violence and cruelty which characterized that of other parts of New Spain.

### TOTONAC-MEXICAN HOSTILITY

It is not difficult to understand the reasons for the Totonac attitude, which so profoundly influenced the conquest of New Spain. Through a series of brutal wars with the Triple Alliance, the Totonac had lost their independence and had been subjected to heavy tax levies. Moreover, the arrival of the Spaniards had given rise to a series of Mexican campaigns in the course of which tribute had been augmented and cruelties carried to an extreme.[49]

Assuredly, the Totonac hoped, with Spanish aid, to challenge Mexican supremacy anew and to avoid the reprisals which had followed previous resistance. Candidly, they trusted the power of the Spaniards, which they claimed to know through the earlier skirmishes in Tabasco and "Potonchan" (Díaz del Castillo 1:161).

### THE QUETZALCOATL MYTH

The influence of the promised return of Quetzalcoatl has been discussed frequently with relation to the Conquest, but chiefly with respect to the Mexicans and Moctezuma; its influence on coastal pueblos, particularly Totonac, scarcely has been considered.

Moctezuma and the Mexicans were convinced that the arrival of the Spaniards—be they Quetzalcoatl himself or simply his envoys—marked the end of the rule of Tenochtitlan. Accordingly, the myth of Quetzalcoatl was instrumental in paralyzing the initiative of the towns of the Valley of Mexico. But what was the Totonac reaction?

It is evident that the Totonac likewise regarded the Spaniards as supernatural, for once this belief weakened (ftn. 54, p. 29), their attitude toward the conquerors changed radically. In short, it may be said that the myth presumably aided the Spaniards in establishing friendship and alliance with the Totonac. Although the early sources do not make specific mention of the Quetzalcoatl myth among the Totonac, they report roughly equivalent ideas.[50] Moreover, in "Cempoala" has been found a clay statue, with various attributes of Quetzalcoatl (García Payón, 1949 a, pp. 12–15), and the same site has a temple dedicated to the

[49] ". . . se alteraron muchas provincias que querían negar la obediencia á Motecuhzoma por las demasiades imposiciones de tributos que cada día, les ponía, usando más de crueldad y tiranía que de piedad . . . y los que esto más frecuentaban fueron los de las provincias de Tonacapan que llegaban hasta las costas del mar del Norte, que parece que su Divina majestad iba disponiendo las cosas como veía que convenía para la entrada de su santa fe católica en este nuevo mundo" (Ixtlilxochitl 2:332–333).

[50] Tenian gran esperanza en ella, que por su intercesion les habia de enviar el Sol á su hijo, para librarlos de aquella dura servidumbre . . ." (Las Casas, p. 325).

"También se halló que en algunas provincias de esta Nueva España, como era en la Totonaca, esperaban la venida del Hijo del gran Dios (que era el sol) al mundo, y decían que había de venir para renovarlo y mejorarlo en todas las cosas" (Mendieta 3:200).

god of wind, Ehecatl (García Payón, 1949 b, p. 452), who usually is identified with Quetzalcoatl.

We may guess that the confusion of Quetzalcoatl with the Spaniards produced as much pleasure and satisfaction among the Totonac as it did despair and bitterness among the Mexicans. Undoubtedly, it favored Cortés' enterprise from the start, in that it disarmed his enemies of the plateau, at the same time that it won him allies in Totonacapan.

### SPANISH-TOTONAC ALLIANCE

The route followed by Cortés' troops is not difficult to reconstruct along general lines, from the statements of Cortés himself and those of Díaz del Castillo. From the shores of the present Veracruz, they followed the coast northward, to the Río de la Antigua. This stream served, in part, as a boundary between the area dominated directly by the Mexicans and Totonacapan, which latter, although tributary to Moctezuma, preserved some measure of independence. Here, on the river, the Spaniards came upon "some pueblos subject to another great pueblo which is called Cempoal" (Díaz del Castillo 1: 168). Crossing the river, the army headed westward, until it met an envoy from the chieftain of "Cempoala," who led them to the city. After a brief stay, the Spaniards continued to "Quiahuixtlan," where they established their base.

This was the spot where the Spanish-Totonac alliance took form. Here, the principal men of "Cempoala" and "Quiahuixtlan" foregathered; Cortés listened to their long list of grievances against the Mexicans and promised aid. The arrival of the tax collectors of Moctezuma almost disrupted plans, for the Totonac leaders lost their recently instilled courage. Nevertheless, the seizure of the Mexicans increased Spanish prestige and allowed Cortés to instruct the Totonac to pay no further tribute and to disregard orders from Moctezuma. The realm of the Triple Alliance started to crumble. A large part of the rich and coveted coast, for whose possession Tenochtitlan, Texcoco, and Tacuba had fought since the middle of the preceding century, slid from their grasp without a single battle. The next step was to legalize the alliance by incorporating the Totonac into the Spanish Empire.[51]

Unfortunately, we do not know which pueblos of Totonacapan were included in the pact. Except for "Cempoala," "Quiahuixtlan," and Misantla, the participating towns remain anonymous, although it is said that "more than 30 pueblos of the sierras" were involved (Díaz del Castillo 1: 178); Cortés (Gayangos, p. 53) raised the number to 50.

It appears logical to conclude that the allied Totonac zone did not extend north of Nautla, where there was a strong Mexican garrison, or south of the domain of "Cempoala," that is, the Río de la Antigua. The *sierras* mentioned in the chronicles do not refer to the great cordillera along the borders of modern Veracruz and Puebla, inasmuch as Cortés (Gayangos, p. 53) speaks of the "sierra comarcana a la dicha Villa," which clearly indicates a point near "Cempoala." Presumably, then, the *sierras* were the mountainous zone which is found between the Río de la Antigua and the Río de Nautla and which runs more or less parallel to and about 40 km. inland from the Gulf shores. Since Misantla informants in the late sixteenth century stated explicitly that their leaders had gone to Veracruz Vieja, to render homage to Cortés (Relación de Misantla), it may be assumed that their pueblo was one of those of the *sierra.*

Word of the alliance spread widely,[52] and war broke out, as it had years before, in Cotaxtla, Tuxpan, and other pueblos (Appendix B), with a general massacre of Mexicans. But this time, vengeance was not forthcoming, and Moctezuma was indifferent to offenses which on other occasions had brought destruction upon the pueblos and slavery or death to its inhabitants.

The only military episode to take place before Cortés left for Tenochtitlan was that of "Zimpancingo" or "Cingapacinga" (Díaz del Castillo 1: 181). This pueblo presumably is to be identified with the "Tizapancingo" which appears on the Patiño map (Colección Orozco y Berra, No. 57). In any case, there was a Mexican garrison in "Zimpancingo" and the chieftain of "Cempoala," com-

[51] "Entonces prometieron todos aquellos pueblos y caciques a una que serían con nosotros en todo lo que les quisiésemos mandar, y juntarían sus poderes contra Montezuma y todos sus aliados. Y aquí dieron la obediencia a Su Majestad, por ante un Diego de Godoy, el escribano, y todo lo que pasó lo enviaron a decir a los más pueblos de aquella provincia" (Díaz del Castillo 1: 178).

[52] ". . . corrio por toda aquella Costa, y Serranía, se rebelaron muchos Lugares, y Señores, y toda aquella Tierra: No dexaron Recaudador ninguno de Mexico, y publicaron Guerra abierta contra Motecuhçuma . . . (Torquemada 1: 403).

plaining that its troops had opened hostilities, requested the aid of Cortés (Díaz del Castillo 1:182). A force of Spaniards, accompanied by 2,000 warriors from "Cempoala," headed for "Zimpancingo," to find the Mexicans had abandoned the town. Basically, this appears to have been an intrigue on the part of "Cempoala," an old enemy of "Zimpancingo" (Díaz del Castillo 1:185), owing to boundary disputes (Solís, p. 73). Cortés did not allow those of "Zimpancingo" to suffer, and, moreover obligated the chieftains of the two towns to make their peace (Díaz del Castillo 1:187).

### TOTONACAPAN AT THE TIME OF CORTES' MARCH

More or less contemporaneous with the above were other events which need not be mentioned in detail: for example, the establishment of the first *ayuntamiento* in New Spain; the founding of the first Veracruz, opposite San Juan de Ulúa, and, subsequently, that of the new Veracruz, on the shores of the Río de la Antigua; the conspiracy of the partisans of Diego Velázquez, severely crushed by Cortés; and the sinking of the fleet, except for a vessel which carried emissaries to Spain. Of these, perhaps the most important was the founding of the new Veracruz, built with Totonac aid, and fortified to accommodate a small Spanish garrison.

At this time, Totonacapan was at peace. A firm alliance with a goodly number of its pueblos had been arranged and, temporarily, Mexican resistance was paralyzed. A Spanish garrison had been established in Veracruz, and the army had been reinforced with sailors from the sunken fleet. Under these propitious circumstances, Cortés began preparations for his march to Tenochtitlan.

Before he left, an incident took place which, on the one hand, jeopardized Spanish-Totonac relationships and, on the other, reinforced them. The chief of "Cempoala" previously had told Cortés of his eagerness to cement friendship through marriage of Spaniards with Totonac women. Cortés, desirous of inducing the Totonac to abandon old beliefs and practices, refused the women; and, at his orders, the Spaniards began to destroy the native idols, in the face of great Totonac indignation. The chief of "Cempoala" intervened and an armed clash was averted. As the final outcome, the Spaniards received eight women; and the native temple, cleaned and whitewashed, was converted into a Christian chapel.

Before setting out, Cortés appointed Juan de Escalante head of the small garrison to be left behind and, as a gesture of acceptance, the Totonac censed him with copal incense (Díaz del Castillo 1:207; Torquemada 1:411).

### THE TOTONAC IN CORTES' ARMY

Although the Totonac attitude toward the Spaniards may be considered decisive for the outcome of the Conquest of New Spain, the same cannot be said of Totonac military participation. The number of warriors was not small, yet their action was limited and by no means outstanding.

There is no agreement concerning the number of Totonac who accompanied Cortés. The latter himself (Gayangos, p. 53) speaks of 50 towns and fortresses and of 50,000 warriors. Torquemada (1:402) raises the number to 100,000, as do Solís (p. 69) and Herrera (4:404); Oviedo (3:261) follows Cortés' estimate.

In any case, the matter is of little importance, since the entire group was not mobilized. Only 2,000 "Cempoaltecan" warriors participated against "Zimpancingo," and a small group accompanied Cortés to Tenochtitlan, less for military reasons than for the security of the Spaniards who remained behind, in Totonac territory (Gayangos, p. 53). Díaz del Castillo (1:213) writes of "forty principals, all men of war" and says that, in addition, "they gave us two hundred *tamemes* [porters] to carry the artillery." Solís (p. 79) agrees in the number of porters and of principal men, but adds that the latter were complemented by sufficient warriors to bring the total to 400. Cortés (Gayangos, p. 62) himself places the number at 400. Oviedo (3:268) gives the same total, but adds 300 warriors from Ixtacamaxtitlán which, by his own account, was not Totonac but Mexicano (Oviedo 3:260).

With the exception of Sahagún (4:45, 46, 60), sixteenth-century sources are silent concerning Totonac military participation. Nevertheless, a later account (Solís) extols the bravery of the Totonac. It was a warrior of "Cempoala" who notified Cortés of the presence of Tlaxcalan spies in the encampment (Solís, p. 98); and in Cholula, the "Cempoaltecas" discovered the famous ambush (Solís, p. 121). Moreover, the Totonac

served as advance guard for the cavalry, so that "the horses might not be endangered" (Solís, p. 124). As a matter of fact, one gains the impression that Cortés trusted the Totonac (Gayangos, p. 60) more than his recently acquired allies, the Tlaxcalans, for when the Spaniards retired to their quarters, they were accompanied only by "Cempoaltecas" (Solís, p. 125). Just before entering the Mexican capital, a number of Totonac requested permission to return to their homes, and Cortés assented. However, both Totonac and Tlaxcalans were in the ranks when the army entered Tenochtitlan (Sahagún 4: 60; Solís, p. 133).

### TOTONACAPAN AFTER THE MARCH OF CORTES

While Cortés and his army were proceeding toward Tenochtitlan, Escalante, and the small force which had been left behind, faced a difficult situation. The Mexican garrison in Nautla [53] began to overrun the country, and the Totonac leaders complained to Escalante, reminding him of promised aid. The Spaniards were scarcely in condition to be helpful because, apart from their limited numbers, most of them were either ill or aged. Regardless, assistance was indicated, to avoid losing prestige and to avoid having later to face not only Mexican but Totonac ire.

Escalante attempted to resolve the problem diplomatically, by sending "Cempoalteca" envoys to Cuauhpopoca, the Mexican leader in Nautla. The response was bold and discourteous (Solís, p. 163). Accordingly, the Spanish captain mustered some 40 of his most fit soldiers, and with 2,000 Totonac troops (Díaz del Castillo 1: 344)—or, 6,000 (Epistolario 1: 76), according to one of the participants—he sallied forth against the Mexicans. The encounter took place on the plains of "Almería" (Nautla), and the result was indecisive. Scarcely had the battle started when the Totonac deserted the field. Nevertheless, Escalante managed to enter Nautla and to burn the houses. Although the Mexicans officially were vanquished, seven Spaniards were killed, among them Escalante, and another was captured alive and his head sent as a trophy to Moctezuma.

In spite of the fact that the battle was generally presented as a Spanish victory, letters which reached Mexico from Veracruz depicted a desperate situation.[54] Cortés acted rapidly and effectively, by forcing the imprisoned Moctezuma to have Cuauhpopoca tortured. Totonacapan again was reduced to obedience. Cortés sent Alonso de Grado to take charge of the garrison, replacing him almost at once by Gonzalo de Sandoval, who completed the subjugation of the area. While Cortés, keeping Moctezuma prisoner, was sending explorers to different parts of the Mexican realm, we may imagine that Veracruz garrison was not inactive, especially when in charge of a leader with the qualities of Gonzalo de Sandoval. But there is no record, at that time, of further campaigns in Totonacapan.

### NARVAEZ, AND THE RETURN OF CORTES

As a matter of fact, Gonzalo de Sandoval had little time at his disposal before the appearance of the fleet sent by Diego Velázquez, with troops under the command of Pánfilo de Narváez. The infuriated Governor of Cuba was eager, at all costs, to subdue Cortés.

The forces of Narváez camped in "Cempoala," and lost no time in arousing the hatred of the Totonac. The chief of "Cempoala" had received the group with joy, believing that reinforcements had come for Cortés and expecting, moreover, the treatment warranted by virtue of the Totonac position as allies and Spanish subjects. But his disillusionment was rapid and complete. Not only did Narváez incite Moctezuma against Cortés, but he exploited and mistreated the Totonac. He personally despoiled the "Cempoalteca" chief of his treasures and obliged him to surrender Spanish property left in his custody. The subordinates of Narváez followed the example set by their leader.

The activities of Narváez not only encouraged the Mexicans to rise against Cortés, but they likewise threatened to provoke a Totonac revolt. The day was saved in Totonacapan by the rapid march of Cortés from Tenochtitlan to "Cempoala" and by his brilliant defeat of Narváez; not so in the Mexican capital where, provoked by Pedro de Alvarado, a general uprising took place.

[53] Díaz del Castillo (1: 343) places it "a la raya de Pánuco, entre Tuzapán y un pueblo que le pusimos por nombre Almería"—that is, Nautla.

[54] ". . . que todos los pueblos de la sierra y Cempoal y su sujeto están alterados y no les quieren dar comida ni servir en la fortaleza, y que no saben qué se hacer, y que como de antes los tenían por *teules,* que ahora que han visto aquel desbarate les hacen fieros, así los totonaques como los mexicanos, y que no les tienen en nada ni saben qué remedio tomar . . ." (Díaz del Castillo 1: 342).

Skillfully, Cortés reestablished cordial relations with the Totonac, and upon his return to Tenochtitlan, he was accompanied by "many Indians of Zempoala and Tlaxcala, all armed for war with great haste" (Sahagún 4:67).

### TOTONACAPAN DURING THE SIEGE OF TENOCHTITLAN

About this time, mention of Totonacapan fades from the early chronicles, which are absorbed by the main drama of the siege and surrender of the Mexican capital.

It is, however, logical to suppose that peaceful penetration was extended progressively throughout Totonacapan. The implication is that the northern zone was beginning to come under Spanish control. Since 1520, Cortés had planned an expedition to the Huasteca, with a view to locating a port more adequate than those of San Juan de Ulúa and "Quiahuixtlan." For various reasons, he was not able to undertake this move until 1522. But the Huasteca lies directly north of Totonacapan, and we may assume he counted on controlling the latter province before establishing himself in the area to the north. In fact, it would appear that Papantla actually passed into Spanish hands before the fall of Tenochtitlan.[55]

About the time the Mexican capital was under siege, there were important uprisings in Jalacingo, on the borders of Totonacapan (Díaz del Castillo 2:119–120; Gayangos, p. 163; Oviedo 3:344), and in Huatusco (Gayangos, p. 260; Ixtlilxochitl 1:383; Oviedo 3:426), some distance to the south. Both were suppressed by Sandoval. However, there is no indication that these agitations had strong reverberations in Totonacapan. Misantla, at least, continued under Spanish rule (Relación de Misantla), although it would appear that Almolonga rebelled, with disastrous results.[56]

For western Totonacapan—the highlands along the modern Veracruz-Puebla border—we have old *relaciones* from "Matlatlan" and Chila, Zacatlán, Hueytlalpan, and Jojupango. Without offering resistance, the first two were conquered by Francisco de Montejo, about 1520 or 1521 (Relación de "Matlatlan" y Chila). *Relaciones* for the other pueblos indicate that Hueytlalpan submitted peacefully to Pedro Cintos de Portillo and Juan de Salazar;[57] Jojupango, to Gonzalo Portero; and Zacatlán, in 1520, to Hernán López.

In conclusion, it would appear that between 1519 and 1522 the Spanish conquest of Totonacapan was more or less completed—with the exception of certain isolated pueblos, difficult of access.

### EVANGELIZATION

Conquest was followed by evangelization—or, as Ricard (1933) calls it, "spiritual conquest." Missionizing endeavors in Totonacapan began early and endured late. Two religious orders were involved, but, on the whole, their labors appear not to have been very intensive. In any case, the results were by no means in accord with the prolonged proselytizing to which Totonacapan was subjected, and there are evident survivals, even today, of old religious beliefs and practices.

### THE FIRST MISSIONARIES

Proselytizing began at the same time as the military conquest. Obviously, the initial procedures were very distinct from those which the Franciscans followed later. We may recall the destruction of the idols in "Cempoala"; the brusque discourses of Cortés; and the conversion, by force, of idolatrous temples into Christian chapels. There is no doubt that the conquerors, and especially Cortés, felt deeply the missionary aspect of their enterprise. Not infrequently, Cortés was on the verge of ruining his own plans—once, as we have seen, in "Cempoala"—through the spirit of religious crusade.

The first Christian chapel in New Spain was established in a *teocalli* in "Cempoala," after the destruction of the native idols, which were supplanted by crosses and an image of the Virgin. The temple was carefully cleaned and whitewashed, and a soldier, one Juan de Torres, elderly and lame, was placed in charge. He was aided by various Totonac functionaries, who were obliged

[55] ". . . quando vino el marques del valle tuvieron nueba de su venida estos dichos yndios y como vieron que montecuma se avia subjetado aunque ellos no estaua á el, se subjetaron al dho. marques . . ." (Relación de Papantla).

[56] "Ay . . . hasta veinte indios tributarios; en tiempo de su gentilidad auia mas de myll y quinientos: consumyeronse como esta dicho y tambien porque despues de conquistados se reuelaron y en la reduçion fueron destruydos" (Paso y Troncoso 5:118).

[57] ". . . los dichos yndios se les dieron por la noticia que tuvieron que se auia dado montecuma en mexico . . ." (Relación de Hueytlalpan).

to change their clothing and to cut their hair. This perhaps may be taken as a symbol of early evangelical procedure in New Spain.

Following these first steps, real missionary labor began with the arrival of the Franciscans, in 1523. Although they did not scorn high-handed procedures and even force, they relied more on the effects of preaching and conversion. The first figure of this new era in Totonacapan was Fray Andrés de Olmos.

According to Mendieta (4: 95, 96), Padre Olmos proceeded from Mexico to Hueytlalpan, and to "the sierras of Tuzapan, where he was several days and converted and baptized all that people, and learned and knew very well the Totonac language." Among his labors is mentioned the construction of a hospital in Hueytlalpan (Epistolario 14: 77). Apparently he also was active in Cuautenco (Paso y Troncoso 5:153), a pueblo subject to Tetela; in fact, he is credited with renaming it San Esteban.

Manifestly, the importance of the work of Fray Andrés de Olmos and his knowledge of the Totonac language indicate a much more prolonged stay in Totonacapan than that reported by Mendieta. We may assume that his labors in that area began prior to 1530, in which year he founded the first mission in the Huasteca (M. Cuevas, 1942, 3:409–410), for Mendieta (4: 96) states flatly that Olmos proceeded from "Tuzapan" to the Huasteca.

However, he evidently returned later to Totonacapan, for there are two documents (Olmos) signed by him in 1540, in the pueblos of Hueytlalpan and "Matlatlan" respectively. Both concern the heresies of a Totonac chief in "Matlatlan"; one is a letter from Olmos to Bishop Zumárraga; the other presents evidence concerning interrogation of witnesses. Moreover, a document dated 1578, in Hueytlalpan (AGN, No. 2), states that Olmos was in charge of the mission in that pueblo 46 years before, or in 1532.

Olmos' work in Totonacapan was continued by Pedro Cintos—an old soldier of Cortés and conqueror of Hueytlalpan, and *encomendero* of that town and of non-Totonac Tlatlauquitepec. There "he worked to enrich himself at the cost of sweat and blood of the Indians he held in *encomienda*" (Mendieta 4:127). But he suffered a change of heart, "when most absorbed in greed for temporal things," and dedicated himself thereafter to the propagation of the faith (Mendieta 4:128).

A third, and more tenuous, figure evidently was roughly contemporaneous with Olmos and Cintos. This is Fray Francisco Toral, who reached Mexico with Olmos and the famous first group of 12 Franciscans. Nothing is known of his activities in Totonacapan; in fact, the assumption that he proselytized there is based exclusively on a lost work [58] attributed to him. It is said to have been written some time between 1524 and 1572 (Ricard, p. 345), a span so broad that it gives little clue to dating. Between 1557 and 1560, Toral was head of the Franciscan province of the Santo Evangelio (Ricard, ftn. 7, p. 84), and it is possible that his Totonac contacts dated from this period. Presumably, they were prior to 1561, when he was named Bishop of Yucatán and Cozumel (M. Cuevas, 1942, 1:303).

In summary, there were two principal early figures in the missionary labor among the Totonac, Fray Andrés de Olmos, and the ex-soldier, Pedro Cintos; both appear to have concentrated their efforts in the northern part of the present State of Puebla. A third figure, Fray Francisco Toral, remains dim, but apparently must be considered a contemporary of Olmos and Cintos.

### ORGANIZATION OF THE EVANGELIZATION

Naturally, missionary progress was more marked in Totonacapan once the Franciscan order began to radiate influence from its principal seat in Tlaxcala, which had jurisdiction over Totonac missions in the sierra and in southern Totonacapan.[59]

The arrival, in 1533, of members of the Augustinian order gave new impetus to the missionary labor among the Totonac. They were active in the northern highlands and established a center in Huauchinango, whose convent dates from 1543 (Ricard, p. 94). Another important Augustinian base was in Pahuatlán (Epistolario 14:78), from which center nearby Totonac pueblos were minis-

[58] *Arte, vocabulario, doctrina cristiana y sermones en lengua totonaca* (Ricard, p. 348).

[59] ". . . a Tlaxcala acudía Zacatlan, y todas las serranías que hay por aquella parte hasta la mar, y lo de Xalapa también hasta la mar, y lo que cae hacia el río de Alvarado . . ." (Mendieta 2:94).

In part, this is confirmed by the Relación de Zacatlán: ". . . ques obispado de tlascala tienen á cargo y administracion este pueblo y sus subjetos tres frayles franciscos que administran la dotrina en esta dicha cabesçera del dicho obispado."

tered (Doctrinas, p. 281). With respect to Totonacapan, Augustinian efforts were concentrated along the borders of the present States of Puebla, Hidalgo, and Veracruz.

The Dominicans, who reached Mexico in 1526, and the Jesuits, toward the end of the century, were not active in Totonacapan, where proselytizing remained in the hands of the Franciscans and Augustinians.

The evangelical work of the religious orders was supplemented by that of the secular clergy, and all of Totonacapan fell within the bishopric of Tlaxcala. The conflicts between the two main bodies of religious workers during this epoch are well known and undoubtedly retarded appreciably the conversion of the natives (Ricard, pp. 293–301).

Between 1567 and 1571, the secular clergy replaced the religious orders in most of Totonacapan which lies within the present State of Veracruz.[60] A few Franciscans remained in Jalapa (Códice franciscano, p. 27), to minister likewise in the pueblo of Chiltoyac (Paso y Troncoso 5:119), but their main concern was a hospital for Spaniards and Indians (Paso y Troncoso 5:105). Elsewhere, administration was in the hands of the clergy (map 4). Each priest tended the spiritual needs of a group of Totonac, scattered in the surrounding area, sometimes at a considerable distance. About this time, Papantla had no resident priest and was visited at first by the *vicario* of Chicontepec (Doctrinas, pp. 220–221). But the latter complained so bitterly of the hardships involved, that the duties eventually were passed to the priest of Chichilintla (Epistolario 14:77; Relación de Papantla). Nevertheless, by 1610, Papantla had its own priest (Mota y Escobar, p. 232).

Within the limits of the modern State of Puebla, religious orders continued to be highly active in Totonacapan, operating from the Augustinian bases in Pahuatlán and Huauchinango (Doctrinas, p. 280; Ricard, p. 94) and the Franciscan center in Zacatlán (Códice franciscano, p. 26; Epistolario 14:73; Ponce 1:208). However, resident priests were found in parts of the area (map 4). Although Chicontepec lies outside the limits both of Totonacapan and of the State of Puebla, its priest must be mentioned here, since he served the northernmost Totonac settlements—Ameluca, Huitzila, Jalpan, "Tuzapan," Papantla, and "Caxitlantongo" (Epistolario 14:74; Doctrinas, pp. 219–220), most of which were in modern Puebla.

### RESULTS OF EVANGELIZATION

In spite of the fact that Totonacapan was the first province to have considerable contact with Spanish culture, and in spite of early missionary activities in that area, the results were less apparent than in many other parts of New Spain.[61]

This relative failure may have resulted in large part from demographic conditions. During the colonial era, the large Totonac centers of the coast declined in importance; through disease and as a corollary of the colonial system, their native populations were all but exterminated, and the survivors apparently took refuge in rugged areas difficult of access. Efforts to concentrate the scattered population of Totonacapan were, for the most part, unsuccessful, and the disperse character of the settlement probably added materially to the difficulties of missionizing.

There are concrete indications of a decrease in population combined with diminishing intensity of evangelical labors. Although, at the time of the Conquest, Papantla reputedly was a sizable pueblo, in 1581, it had only the services of a visiting curate and vicar from Chichilintla (Relación de Papantla). Moreover, by 1579, Misantla had been abandoned by the missionaries of Jalapa, and the Bishop of Tlaxcala provided a cleric (Relación de Misantla). Later, in the course of several visits of Mota y Escobar, between 1608 and 1624, only 26 Totonac pueblos are mentioned, many innocent of resident missionaries and visited from time to time by clerics of neighboring towns.

The scarcity of religious works translated into Totonac and the small number of religious workers equipped to minister in that language may be suggestive, but probably are not significant, because of the general use of Mexicano. However, much later, the church fixed attention sporadically on Totonacapan, and religious documents, translated

[60] The Franciscans had been active in Misantla, in 1557 (AGN, No. 1), where they founded a church; but by 1579, they had abandoned the pueblo (Relación de Misantla).

[61] In 1933, Ricard (p. 330) notes the "survivance du paganisme à côté et en dehors du catholicisme, valable pour les Popoloques, les Totonaques . . ."

into the Totonac language, appeared: Pantaleón, Bonilla, F. Domínguez, and J. M. Domínguez, in the middle eighteenth century; and, in relatively recent times, P. Cuevas and Corona.

The weakness of colonial religious architecture in most of Totonacapan is another indication of the slight attention devoted to its evangelization, once the epoch of Fray Andrés de Olmos was past. Religious structures, monastic and secular alike, built during the colonial epoch, are both scarce and exceedingly modest.

## COLONIZATION

Once the conquest of Totonacapan was completed, attention turned to the problems of organization and exploitation. In this connection, it is essential to recall the apprenticeship which the Spaniards had served in the Iberian Peninsula, in the course of seven centuries of war with and reconquest of the Moors. In essence, the colonial system in Totonacapan followed the patterns developed and applied earlier in Spain, with the modifications necessitated by new surroundings.

Briefly, this pattern of colonization retained the social, political, and economic structure of the conquered pueblos, but involved replacement of rulers. The Spaniards supplanted the Triple Alliance and erected a new superstructure which, in time, overwhelmed the primitive native organization and gradually destroyed it.

The history of the colonization of Totonacapan may be subsumed as follows: the initial system of *repartimiento* and *encomienda;* the appearance and ultimate dominance of the *hacienda;* and the *reducción* and the Indian *congregación.* These will be considered briefly in the discussion to follow.

## NATIVE ORGANIZATION

In Totonacapan the Spaniards found a native organization which Cortés attempted to retain without major change, believing that it might be adapted easily to his own ends.

The early chronicles indicate that Totonac society was stratified. The upper social group was formed by the *caciques* or *señores*, from whose families the religious, possibly also the military, leaders were recruited. The lower group, which comprised the bulk of the population was composed of warriors, agriculturalists, and slaves. It is logical to suppose that in the large centers there were important groups of artisans, perhaps also of merchants, but we know nothing of their social position.

The military conquest, followed by the evangelization and colonization, sped the disappearance of the native priests. Even so, there are indications (Olmos; Torquemada 3:203–205) that in some places the latter continued to function secretly and still had undoubted influence over the native peoples. Likewise, it seems probable that the system of *encomiendas* and *reducciones*, combined with Spanish control of all important commerce, led to the disappearance of the native merchants and artisans, if such groups existed. Native military organization also was eliminated by the Spaniards as soon as the need for auxiliary forces no longer was imperative—perhaps soon after the fall of Tenochtitlan.

In short, while the Spaniards maintained the two principal native social divisions, the latter were simplified through the suppression of priests, probably of merchants and artisans, and of warriors. The remaining members of the upper stratum, the ancient chieftains or *caciques*, were utilized by the Spaniards as intermediaries with the rest of the population. They were, of course, controlled intermediaries, who were replaced, in case of rebellion or marked disobedience, by other native authorities.

The prewhite political organization as a whole was retained by the Spaniards. In ancient times, an important center, such as Hueytlalpan, had a cluster of small settlements subject to it; to the political center of this nucleus, the Spaniards applied the term of *cabecera.* The system of land ownership likewise appears to have suffered no great alterations. Arable lands, woods, and water supply continued, on the whole, to be communal property (AGN, Nos. 1, 2, 3, 4, 10, 17), except in cases where they belonged directly to the native chiefs. The lower class continued to till the land for their *caciques*, for their own benefit, and for the payment of tribute. As the system of *encomiendas* and church organization developed, some Indians were obliged to render more labor than previously to their new Spanish overlords, both lay and ecclesiastical.

Despite these changes in the ancient Totonac social structure, the most direct factors which led

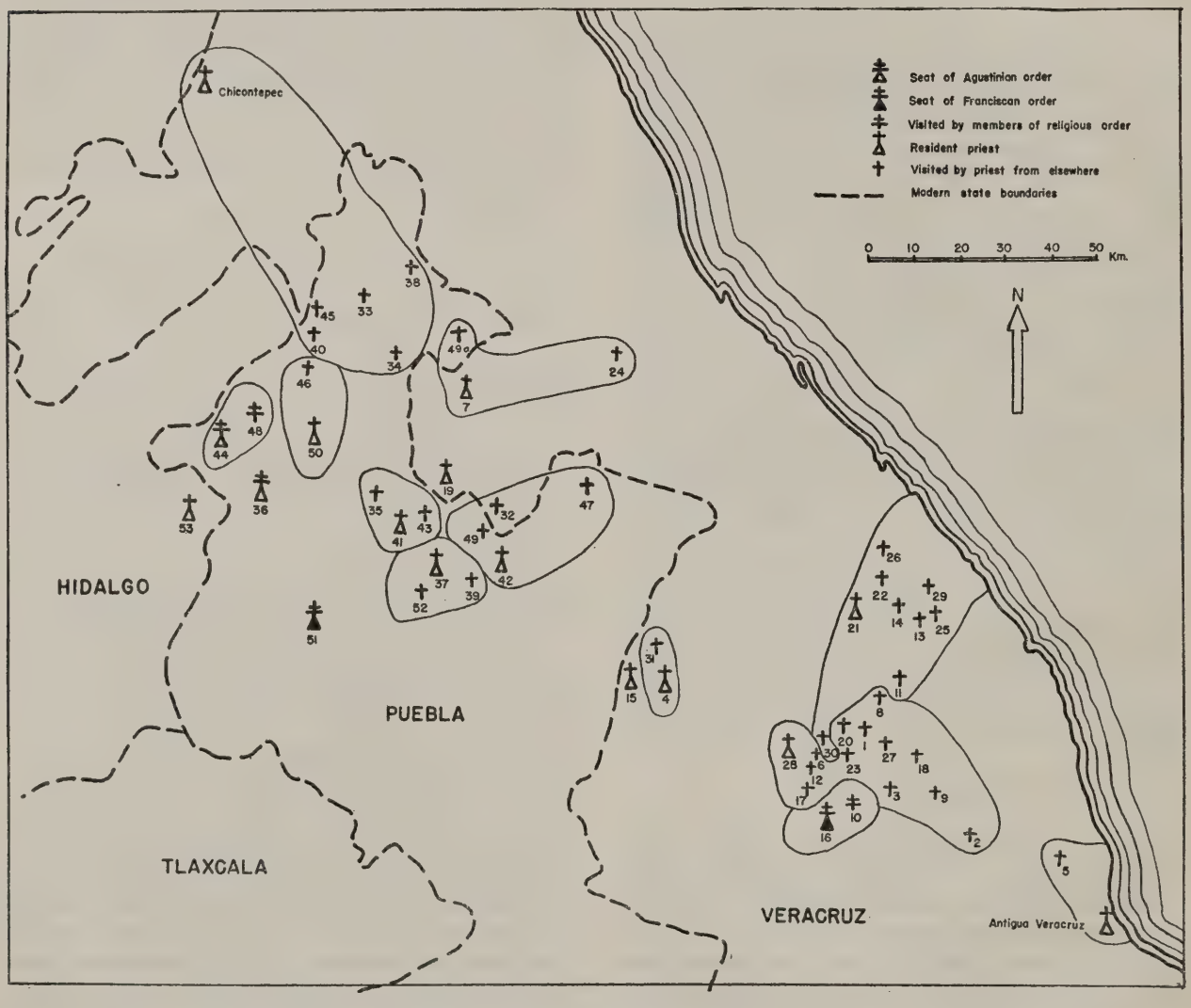
to ruin lay in the superstructure built by the Spaniards during the colonial period.

### REPARTIMIENTOS [62] AND ENCOMIENDAS

It has been said above that Cortés attempted to maintain native organization, insofar as it could be adapted to his ends as conqueror and colonizer. In part, he was successful; but, fundamentally, he failed.

[62] An excellent study of the *repartimientos* has been published by L. B. Simpson, 1938.

A man of undoubted talent, Cortés hesitated to apply to New Spain the system of *repartimientos* which in Cuba and Española had caused rapid decimation of the native population. Essentially, the *repartimiento* consisted in imposing on the conquered peoples tasks of forced labor—in the fields, in the mines, in the construction of buildings and roads, and so on. Sometimes, these projects were for the benefit of the Crown, sometimes for the church, and sometimes for private individuals. They were considered particularly




Map 4.—Ecclesiastical organization in Totonacapan, ca. 1569–71.

In only one case (pueblo No. 10), the information applies to a later date, namely 1580.

A partial key appears on the sketch. Pueblos which were administered from the same center are enclosed within a light bounding line. Totonac settlements are entered by number. Two pueblos—Chicontepec and Antigua Veracruz—are indicated by name alone; they lie outside Totonacapan, but Totonac pueblos fell within their jurisdiction.

*Legend to map 4*—Continued

Below, pueblos are listed according to present state affiliation, with numbers corresponding to those of the map. Source material is indicated in three columns. The first refers to *Doctrinas de indios a cargo de clérigos* and to *Doctrinas de indios a cargo de agustinos*. Both are cited as Doctrinas, and the page indicates which document is involved. The second column refers to the *Relación del distrito y pueblos del obispado de Tlaxcala*, published in the Epistolario, and so cited. The third column includes miscellaneous material.

| No. | Pueblo | Sources | | |
|---|---|---|---|---|
| | | Doctrinas | Epistolario | Others |
| | VERACRUZ | | | |
| 1 | Acatlán | 242 | 14: 81 | |
| 2 | Actopan | 241 | 14: 81 | |
| 3 | Almolonga | 242 | 14: 82 | |
| | Antigua Veracruz | ---------- | ---------- | Paso y Troncoso 5: 193. |
| 4 | Atzalan | 264 | 14: 80 | |
| 5 | "Cempoala" | ---------- | 14: 82 | Paso y Troncoso 5: 193. |
| 6 | Chapultepec | 240 | 14: 81 | |
| 7 | Chichilintla | ---------- | 14: 77 | |
| 8 | Chiconquiaco | 242 | 14: 81–82 | |
| | Chicontepec | 219 | 14: 75 | |
| 9 | Chicuasén | 241 | 14: 81 | |
| 10 | Chiltoyac | ---------- | ---------- | Paso y Troncoso 5: 119. |
| 11 | "Ciguacoatlan" | 204 | ---------- | |
| 12 | Coacoatzintla | 242 | 14: 81 | |
| 13 | Colipa | 204 | ---------- | |
| 14 | "Huehuetepec" | 204 | ---------- | |
| 15 | Jalacingo | 247 | 14: 79–80 | |
| 16 | Jalapa | ---------- | ---------- | Códice franciscano p. 27. |
| 17 | Jilotepec | 240 | 14: 81 | |
| 18 | Maxtlatlán | 241 | ---------- | |
| 19 | Mecatlán | 232 | ---------- | |
| 20 | Miahuatlán | 242 | 14: 81–82 | |
| 21 | Misantla | 204 | 14: 80 | |
| 22 | "Nanacatlan" | 204 | ---------- | |
| 23 | Naolinco | 240 | 14: 81 | |
| 24 | Papantla | 221 | 14: 77 | |
| 25 | "Piloya" | 204 | ---------- | |
| 26 | Potingo | 204 | ---------- | |
| 27 | Tepetlán | 241 | 14: 81 | |
| 28 | Tlacolulan | 239 | 14: 80 | |
| 29 | "Tlapostectlan" | 204 | ---------- | |
| 30 | Tonayán | 204 | ---------- | |
| 31 | "Yohualtlacualoyan" | 264 | ---------- | |
| 32 | Zozocolco | 210 | 14: 76–77 | |
| | PUEBLA | | | |
| 33 | Ameluca | 219 | 14: 74 | |
| 34 | "Caxitlantongo" | ---------- | 14: 74 | |
| 35 | Chila | 218 | 14: 78 | |
| 36 | Huauchinango | ---------- | ---------- | Ricard, p. 94. |
| 37 | Hueytlalpan | 213 | 14: 77 | |
| 38 | Huitzila | 219 | 14: 74 | |
| 39 | Ixtepec | 214 | 14: 77 | |
| 40 | Jalpan | 220 | 14: 74 | |
| 41 | Jojupango | 218 | 14: 78 | |
| 42 | Jonotla | 210 | 14: 76 | |
| 43 | "Matlatlan" | 218 | 14: 78 | |
| 44 | Pahuatlán | 280 | ---------- | |
| 45 | Pantepec | 219 | 14: 74 | |
| 46 | Pápalo | 223 | 14: 73 | |
| 47 | Tenampulco | ---------- | 14: 76–77 | |
| 48 | Tlacuilotepec | 282 | ---------- | |
| 49 | "Tonatico" | ---------- | 14: 76–77 | |
| 49*a* | "Tuzapan" | 221 | 14: 77 | |
| 50 | Villa Juárez | 222 | 14: 73 | |
| 51 | Zacatlán | ---------- | 14: 73 | Códice franciscano, p. 26. |
| 52 | Zongozotla | 214 | ---------- | |
| | HIDALGO | | | |
| 53 | Acaxochitlán | 270 | 14: 73 | |

useful, as a means of recompensing conquerors for their services to the state.

In one of his letters to the king, Cortés (Lorenzana, p. 37) expressly asked that no *repartimientos* be made in New Spain, proposing instead that the conquerors be paid with a share of the tribute received by the Crown. However, impelled by local circumstances, and under pressure from his men, on his own initiative, Cortés began *repartimientos*.[63]

Thus started, *repartimientos* of Indians flourished, especially in the form of *encomiendas* granted to the conquerors. In spite of the fact that instructions were issued in Valladolid, in 1523, expressly prohibiting new *repartimientos* and annulling those already in existence, the orders had little effect in New Spain (Gayangos, pp. 328–330). Later, the Crown approached the matter more realistically and attempted to recover what had been given in *encomienda* to individuals. Regardless, during the sixteenth century and the early part of the seventeenth, a large area of Totonacapan was in hands of *encomenderos*, as the recipients of such grants were called. In table 14 (Appendix B) are found listed *encomenderos* of pueblos which, during the sixteenth century, were stated expressly to be Totonac.

As is well known, the *encomienda* consisted in assigning to a Spaniard a group of Indians, who were obliged to give certain services—for example, the cultivation of land, care of cattle, work in mines and sugar factories, construction of roads, and the like. For these labors, the Indians were to be paid or a corresponding amount was to be deducted from their tribute. In addition, the natives were expected to maintain the *encomendero* and his household, through personal service and payment of tribute. In exchange, the *encomendero* was obligated to protect the Indians, foster good habits, and provide religious instruction.

From the Spanish point of view, the *encomienda* was a precarious system, by reason of its temporal character. Legally, it was supposed to terminate with the death of the first grantee, following which the Indians passed under direct control of the Crown. Although the constant petitions of the *encomenderos* gained them the right to pass the grant to their children or direct heirs, and later to their grandchildren and more remote heirs, and although even in 1704, a new extension was granted, the *encomienda* system gradually lost its importance and was supplanted by other institutions.[64] Nevertheless, the *encomienda* endured a sufficient time to be a main factor in the destruction of the ancient social organization and other basic aspects of Totonac culture.

It has been noted above that the *encomienda* was a Spanish institution transplanted to the New World, where it acquired certain new characters—principally, an emphasis on religious instruction and acculturation. Although in Spain, a system had been created to defend the rights of the peasants, it did not extend to Totonacapan, where the Indians were directly subject to the whims of the *encomendero*. The only restraints on the latter were provided by occasional intervention of a Crown representative and by pressure from members of the religious orders. Accordingly, abuses and exploitation were standard practices, despite the substantial body of legislation designed to protect the Indians.

The native population was crushed, quite literally. Apart from supporting the native chiefs and paying to the Crown tribute which previously had gone to the Triple Alliance, the Indians were obliged to work for the Spanish *encomenderos* and for the church. It is not difficult to understand why the Totonac chose to abandon their homes and to retire to zones out of reach of Spanish authority.[65]

Socially, the *encomienda* was a new and weighty superstructure added to the burdens with which the native population already was afflicted.

[63] His own statement follows: ". . . fueme casi forzado depositar los señores y naturales de estas partes a los españoles, considerando en ello las personas y los servicios que en estas partes a vuestra majestad han hecho, para que en tanto que otra cost mande proveer, o confirmar esto, los dichos señores y naturales sirvan, y den a cada español, a quien estuvieren depositados, lo que hubiesen menester para su sustentacion" (Cortés, Lorenzana, p. 37; Gayangos, p. 328).

[64] ". . . el ciclo histórico de esta institución . . . quedó cerrado definitivamente, de derecho y de hecho, en la segunda mitad del siglo XVIII" (Ots Capdequí, p. 39).

[65] Of Pahuatlán, it is said: ". . . pidieron los dichos indios quel tributo en que fueron tasados no lo podían complir ni pagar porque al tiempo que se hizo la dicha tasación había en el dicho pueblo gran cantidad de gente y después acá por los ecesivos tributos había venido en gran diminución" (Epistolario 8 : 14, 15).

In 1593, special provision was made to prevent the exodus of Indians from Atzalan (AGN, No. 12); and death and flight of native population are reported specifically for Chumatlán, Papantla, "Tuzapan," Tihuatlán, and Jalpan (Mota y Escobar, p. 232; Doctrinas, p. 220).

Similar situation evidently applied in Crown pueblos as well. Pantepec ". . . esta mui acauado por hauerse muerto y huido muchos yndios" (Mota y Escobar, p. 242).

Legally, however, it did not change preexisting forms of property, and the Crown stipulated that no property, either private or communal, was to be taken from the Indians.[66] It is doubtful that the royal wish was followed in the majority of cases. Nevertheless, it is necessary to recall that private and communal property of indigenous groups has existed in Mexico until modern times.

As the *encomiendas* disappeared, in the course of the eighteenth century, they were transformed into *latifundios*, or great rural properties in the hands of a single family. These became confused with the *hacienda*, which latter developed strongly in Totonacapan toward the end of the sixteenth century and the beginning of the seventeenth.

### HACIENDAS

Although, in time, the *encomienda* and the *hacienda* became confused, at the start, there were radical differences between the two institutions. In general, these lay in (1) form of ownership, (2) labor employed, and (3) type of production.

With respect to the first, ownership of the *encomienda* was insecure, whereas that of the *hacienda* was definitive; that is to say, the latter might be bequeathed, transferred, or sold, without restriction.

The second difference also was fundamental. Whereas the *encomendero* had forced native labor at his disposition, the *hacendado* was obliged to hire help—although, upon occasion, the Indians might give him manual labor by means of a *repartimiento*. The *hacienda* gave rise to a new social stratum: the peon, composed in part of Indians and in part of imported Negro workmen.

The third distinction lay in the fact that the *encomienda* tended, as a rule, to preserve ancient crops and ancient methods of cultivation, whereas, under the *hacienda*, a different type of economic activity generally was developed—in Totonacapan, particularly stock raising and sugarcane production.

Late sixteenth-century records in the Archivo General de la Nación mention numerous authorizations for Spanish colonists to establish ranches (*estancias*) in Totonacapan. Undoubtedly, the lands were indigenous property, either abandoned by the occupants or taken from them (AGN, No. 4). At the time of the Discovery the great Totonac center of "Cempoala" is credited by one source with between 20,000 and 30,000 *vecinos* (heads of families) (Las Casas, p. 129); by another (Aguilar, p. 39), with "more than twenty thousand houses." But by the end of the sixteenth century, it was reduced to 12 taxable individuals (Epistolario 14:82), and a few years later, to 8 heads of families (*indios casados*) (Mota y Escobar, p. 218). The greater part of its lands were converted into cattle ranches (Mota y Escobar, p. 218), and stock raising became of considerable importance in Totonacapan.[67]

*Haciendas* dedicated to sugarcane and its elaboration also flourished in Totonacapan, contributing to the reduction in numbers and to the dispersal of the native population,[68] and at the same time stimulating the introduction of Negro slaves. This development applied particularly to southern Totonacapan, and there is no indication that in the northern part of the province the sugar mill and the use of Negro slaves were either general or significant.[69]

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[66] Land *repartimientos* were to be made ". . . *sin agravio para los indios, sin perjuicio de tercero* . . ." (Ots Capdequí, p. 51).

[67] Muñoz Camargo (pp. 261–262) and Torquemada (1:610) describe the situation in almost the same words. According to Torquemada: "Con el crecimiento de los Españoles, han ido creciendo tambien las Estancias; porque como se fueron poblando los Lugares maritimos de Panuco, y Nauhtla, que son los Llanos de Almeria, asi fueron poblando por todas aquellas Costas muchas Estancias, hasta llegar a las de Putinco, y Miçantla, Estancias de la Vera-Cruz, y otras Tierras calientes . . . que es una cosa sin numero, é increpible los Ganados, que por alli se han criado, y crian, que si no se vé, casi no se cree. Estas Tierras se fueron poblando, en tiempo de este Virrei Don Antonio de Mendoça."

Mota y Escobar (pp. 220–221) lists 18 *estancias* of horses and cattle, in the area between Misantla and Tecolutla; and, in the general vicinity of Papantla, 10 (p. 235), most of the stock being horses and mules.

[68] Díaz del Castillo (3:149–150) attributes the destruction of "Cempoala" to cane and the sugar mill: . . . aun trajo Rodrigo de Albornoz licencia de Su Majestad para hacer un ingenio de azúcar en un pueblo que se dice Cempoal, el cual pueblo en pocos años destruyó."

[69] Although, in Zacatlán, the rulings of Spanish authorities (AGN, Nos. 14, 19, 20) concerning relationships between Indians and Negroes suggest that the latter element must have been sizable. Villaseñor (1:299) mentions *mulatos* in Zacatlán in the mideighteenth century.

We have found no mention of Negroes in the Papantla area. In fact, Papantla does not even appear in the index of a recent "ethnohistorical" work (Aguirre Beltrán), devoted to the Negro in Mexico.

However, in the sixteenth century, *mulatos* are reported in the vicinity of Misantla (Relación de Misantla), and an eighteenth-century document (AGN, No. 7) likewise indicates a Negro element in that zone. In southern Totonacapan, during the early seventeenth century, there was a Negro uprising (Veracruz, Reseña geográfica, p. 7).

### DISPERSAL OF POPULATION

Major demographic changes took place in Totonacapan as the aftermath of the Conquest. Obviously, there was a high mortality from disease and excessive toil, although that resulting from military impact was relatively slight. The demographic aspect which interests us most, at the moment, is the broadcast dispersal of the Totonac who fled from the Spanish yoke to take refuge in the more remote and inaccessible areas.

The zone which suffered the sharpest reduction in population was, at the same time, the richest and the most densely populated—namely, the coast belt and the adjacent hinterland. There, such important Totonac centers as "Cempoala," "Quiahuixtlan," and "Tuzapan" virtually disappeared (pp. 8–10). The highlands were by no means immune, but suffered to a lesser degree. There is a direct and positive correlation between intensity of population reduction and intensity of Spanish occupation. In southern Totonacapan, Negro slaves (Aguirre Beltrán, pp. 210, 217–218) and Mexicanos were used to fill, in part, the gap left by native peoples; and in the north and west, there are indications of an infiltration of Mexican and, on a small scale, of Otomí-speaking peoples.

With the wide scattering of the Totonac, major changes in culture were unavoidable. At the time of the Conquest, native culture was urban and highly complex. Transplanted to scattered hamlets, in isolated and inaccessible areas, it seems evident that there must have been a genuine loss of culture. When, in time, pueblos in Totonacapan rose to importance, their ethnic character no longer was native, but dominantly mestizo.

We have mentioned above that the dispersal of population must have made the process of evangelization difficult. It also retarded acculturation to Spanish norms, and the relative isolation in which the surviving Totonac lived permitted the survival of certain basic elements of native culture to modern times.

### REDUCCIONES, CONGREGACIONES, AND CORREGIMIENTOS

To impede further flight of Indians from Spanish-controlled zones and to concentrate already dispersed elements of population, recourse was had to *reducciones*. This term was applied to clusters of families, obligated to live in a certain spot. The same settlements likewise were known as *congregaciones;*[70] and later, when official administration was placed in the hands of a special functionary, known as a *corregidor*, the same native congregations came to be called *corregimientos* (Ots Capdequí, p. 40). In short, the three terms are roughly synonymous.

The original objective of the *congregación* was, then, to concentrate the population and thereby to facilitate the task of the missionaries, as well as of the *encomenderos* and the tribute collectors. All these elements were interested in the development of the *congregación*, although occasionally members of the religious orders protested. Adverse opinions were based on the fact that changes in residence worked hardship on the Indians. Without entering deeply into the matter (cf. L. B. Simpson, 1934), it is undeniable that the *congregaciones* left Indian lands vacant and that the Spanish colonists lost no time in gaining control of them.

Early attempts to concentrate the population were not effective, and the problem of dispersal remained so acute that, in 1592, the viceroy, Luis de Velasco, resorted anew to *reducciones*.[71] There is mention of two, on the fringes of our area,[72] but

[70] A detailed study of *congregaciones* has been published by L. B. Simpson, 1934.

[71] A royal order of 1607 (AGN, No. 4) discusses the aims and difficulties of the *reducciones*. Thus: "El yntento principal que se a tenido en esas Reduziones se a encaminado a que todos los naturales partizipen de la policia cristiana espiritual y temporal con la menor descomodidad suya fuese posible y asi se ayan removido de sus lugares casas y asientos . . ."

The order makes it clear that depopulation has taken place in established communities (". . . lugares formados donde havia Yglesias doctrina y casas bien fabricadas y hasiendas asentadas y beneficiadas . . .") and attempts to protect the Indians from further hardship (". . . que lo que se haze para el bien espiritual y temporal de los yndios no les resulte en mayor daño suyo . . ."). However, scattered natives (". . . los yndios que estan derramados en las quebradas montes y soledades sin poblaziones . . .") are to be concentrated in settlements (". . . a Poblaziones donde puedan ser bien doctrinados y vivir con pulicia en temples conformes a los en que an bivido . . .").

At the same time, an effort was made to correct the wholesale seizure of Indian lands: ". . . si algunas personas se hubiesen metido y apoderado de las haziendas de los yndios que de unos pueblos an sido reduzidos a otros aunque sea con lizencia y merced particular de los Vireyes vuestros antecesores y vos se las quitareis y desposeereis dellas luego dexandolas gozar a los dueños que fuesen dellas . . ."

[72] Velasco established Mexicanos, Otomí, and Tepehua in Huayacocotla and, in the same year, there were *reducciones* in Chicontepec (AGN, No. 11). Both these pueblos are on the fringes of Totonacapan, and it is not impossible that peripheral Totonac were affected.

no specific indication that Totonac actually were included.

These measures likewise were ineffectual, and efforts were intensified during the viceroyalty of the Count of Monterrey. During his era, the *congregaciones* were important and widespread in Totonacapan. In 1598, Cristóbal Garibay was appointed to study the problem in southern Totonacapan and adjacent areas, and his journey of inspection was to include specific pueblos, many of them outright Totonac or containing Totonac segments of population—Jalapa, Tlacolulan, Misantla, Actopan, "Cempoala," and La Rinconada (AGN, No. 16). The same year, Rodrigo de Zárate was appointed for a parallel mission to a zone which included many Totonac pueblos of the Sierra—Hueytlalpan, "Jicotepec" (now Villa Juárez), Pápalo, Chumatlán, Zozocolco, "Tonatico," Jonotla, and Jalacingo (AGN, No. 15). However, *reducciones* could not have been effective, for a few years later there were further complaints concerning dispersal of population (cf. Mota y Escobar).

### POLITICAL CONSEQUENCES OF THE CONGREGACION

The scattering of population and the system of *congregaciones* eventually destroyed what remained of native political organization.

The reasons are clear. The Totonac, widely disseminated, presumably discarded, more or less rapidly, the political aspects which had been part and parcel of their complicated social organization. We know nothing of their readjustment. But in Tajín today, as in Eloxochitlán, in the highlands, the term "kolopuško" (literally, the oldest man) is used to designate the *jefe político*, or *presidente*, of the modern community; this rather suggests that patriarchal authority once was current.

*Congregaciones* formed by the Spaniards followed a type of organization then prevalent in Spain. The new authorities were chosen in free election by adult males. Although, socially, the ancient chieftains retained a large part of their privileges and their personal property and were able to transit them by inheritance, their political power was seriously shattered. Nevertheless, the first elections were purely formal, and leaders were chosen from the ancient ruling class. These Indian officials were given Spanish designations of *alcalde* and *regidores*, and above them in authority was an Indian governor, appointed by the Spaniards (AGN, Nos. 9, 13). A Crown official, the *corregidor*, directly supervised the functioning of political organization in pueblos of native peoples. In general terms, this organization did not undergo major change during the colonial era, nor was it altered significantly by Mexican Independence.

As mentioned previously, in prewhite days, Totonac organization revolved about large towns, to which various small, nearby settlements were subject. That this system—including original boundaries, as well as land, water, and fishing rights—was preserved by the Spaniards is convincingly demonstrated by the abundance of disputes registered in the Archivo General de la Nación.

### OTHER ASPECTS OF COLONIZATION

A number of phases of Spanish occupation which have not been considered as yet will be treated here.

In the first place, Totonacapan is not rich in minerals (cf. Aguilera), and during the colonial epoch there is no mention of mines of any importance. The exploitation of oil deposits is, of course, an essentially recent development. In other parts of New Spain, Spanish and mestizo cities flourished in mining zones—Pachuca, San Luis Potosí, Guanajuato, and Zacatecas—and Totonacapan lost interest in Spanish eyes precisely because of its lack of exploitable mineral wealth; not one smelting town was founded in Totonac country during the sixteenth century.

In the second place, although Totonacapan was the first coastal area to pass firmly under Spanish control, it had limited importance as a base of communications—both with the interior, by land, and abroad, by sea. Totonacapan proper lay between the two main Spanish lines of communication with the coast: in the south, Veracruz-Jalapa-Perote, and Veracruz-Córdoba-Orizaba; in the north, Tuxpan-"Jicotepec"-Huauchinango.

Furthermore, the difficulty of north-south communications within Totonacapan emphasized its isolation, which only in very recent times is coming to an end. Although a late eighteenth-century map (AGN, No. 6) depicts a north-south road, along the low country of the coast, this route appears never to have attained great importance. In part, water communications compensated for

the lack of good land routes, and vessels plied the coast, from Veracruz to Pánuco.

A third aspect also is significant—that is, the profound difference in environment between most of Totonacapan and the homeland of the conquerors and settlers. Natural surroundings were not propitious for the transplanting of many elements of Spanish material culture—such as agricultural practices, house types, and so on. These took root more readily in the cooler lands of the high plateau.

In summary, it may be said that the natural surroundings—absence of exploitable mineral wealth, difficulty of communications, and sharp contrast in environment between the area and Spain—all contributed to the relative isolation of Totonacapan and, by the same token, retarded acculturation.

### LOCAL COLONIAL HISTORY

Little is known of local history during the colonial regime, with the exception of the changes in social, political, and economic life which have been discussed above. A great wealth of documents in the Archivo General de la Nación (Ramo de tierras) attests endless boundary disputes between various native communities; but these wranglings cast light principally on land ownership and on social and political life. However, they do indicate that during the colonial era there was little variation within that part of Totonacapan which was firmly under Spanish control. We remain in the dark with respect to the rest of Totonacapan—that is, the groups which had been able, to a greater or lesser degree, to avoid Spanish rule.

### INDEPENDENCE

During three centuries of Spanish rule, cultural change in Totonacapan was, on the whole, slow and gradual. But this lethargy was rudely interrupted by the outbreak of the War for Independence. In the course of the succeeding century, the legal position of the Indian was transformed; colonial political organization destroyed; social structure profoundly altered; and acculturation accelerated.

Totonacapan—meaning, now, the zone which, at the beginning of the nineteenth century, still was Totonac in culture and in speech—was subjected to new external pressures. During the nineteenth century, the struggle for land ownership was more prominent than at any time since the sixteenth century, and the seizure of Indian lands reached extraordinary proportions, until the Revolution of 1910 and the new agrarian laws reestablished the rights of the natives. Subsequently, in isolated cases, such as that of Palma Sola, the Totonac were despoiled of their lands, but large-scale land depredation was essentially a nineteenth century phenomenon.

To this situation, Totonac response was substantially the same as it had been 300 years before: urban zones were abandoned and people sought refuge in the more isolated spots—again, with a scattering of population. Nevertheless, a new reaction stands out in sharp relief—namely, the active resistance of a number of important centers and a series of armed rebellions in Totonacapan. Moreover, such national events as Independence, Reform, French intervention, and civil wars, touched Totonacapan and resulted in active Totonac participation.

During the late nineteenth century, exploitation of the rich oil deposits of coastal Totonacapan was begun. A local railroad was built to connect Poza Rica, the main petroleum base, with Tuxpan, on the coast; inland, it was extended to the Palma Sola area. Oil depots were established; new roads were opened—and the superficial aspects of coastal Totonacapan began to change.

Some of the principal aspects and consequences of the above developments will be mentioned briefly below.

### INSURGENT MOVEMENT IN TOTONACAPAN

In October of 1811, the war for national Independence had begun in Veracruz—in Teocelo, Jico, Coatepec, Ixhuacán, and Ayahualulco (Lerdo de Tejada 2: 76)—and the rebels dominated a wide zone in the vicinity of Jalapa and Perote. This initial impulse soon was extended to Totonacapan and, among other places, Naolinco, Misantla, Papantla, and Coxquihui (Lerdo de Tejada 2: 77–83; Rivera 1: 345) rapidly were converted into centers of insurgent movement. Perhaps because of topographical character, perhaps because of native support, the same areas which served the Totonac as refuge spots became also the supply

bases of the insurgents during the blackest days,[73] Probably both factors are involved: on the one hand, the terrain lends itself extremely well to an army battling against superior forces; on the other, Totonac loyalty to the leaders of the war for Independence was unwavering.

Fighting was harsh in Totonacapan. Papantla, in insurgent hands, was recovered by the Spaniards in 1813, to be taken again by the rebels the following year. Once again, in royalist hands, it was besieged by the rebel, Serafín Olarte, in 1819, and was partly burned. Again, about 1820, Papantla became "the target of the rebels and of the royalists" (Rivera 2:129). Misantla also changed hands from time to time and was burned in 1815, and again in 1817. Assuredly, this strife was shared by other pueblos of the vicinity—by Tecolutla, Nautla, Naolinco, and Colipa, for example.

Highland Totonacapan likewise was the scene of bloody battles. In 1811, Zacatlán was occupied by the insurgent chief, Osorno (Bustamante 1:253), and it served him as a practically invulnerable base, from which he organized expeditions against Puebla, Huauchinango, Tulancingo, Pachuca, and other nearby towns.

The one insurgent center which was outright Totonac—in population, in troops, and in leaders—was Coxquihui, not far from Papantla. From 1813 to 1820, this center managed to hold off successive royalist expeditionary forces. Its leader was the famous Totonac rebel, Serafín Olarte, whose son, Mariano, continued in his father's steps.

### OLARTE AND COXQUIHUI

Serafín Olarte was a native of the Papantla area. Even before the War for Independence, he apparently enjoyed considerable prestige among the Totonac, and through his exploits in battle later became the undisputed military leader of northern Totonacapan. In 1813, he instigated an uprising in Coxquihui and managed to assemble a force of three or four thousand with whose assistance he held Coxquihui, defeating one after the other, seven royalist forces sent against him. He assisted Guadalupe Victoria in taking Boquilla de Piedra, on the coast, near the mouth of the Río Cazones, and in keeping this port open to receive arms and ammunition from the United States and from England. He held the royalist garrison in Papantla constantly in check, cutting its communications with the coast. He collaborated actively with Osorno, the rebel leader who held Zacatlán. And he distinguished himself in the battle of Tlaxcalantongo. At one time, "Serafín Olarte was the only man still fighting for the cause of Independence on the north coast of Veracruz" (Olivo, p. 199).

The exploits of Olarte and his Totonac forces are genuinely outstanding, especially in view of the fact that the majority of his troops appear to have relied on the bow and arrow, the latter with stone point (Olivo, p. 200; Núñez y Domínguez, p. 54). Nevertheless, it would appear that the Olartes, father and son, were not the only important leaders in northern Totonacapan, for Rivera (2:126) mentions "hostilities in the area of Coyusquihuy" and speaks specifically of Víctor del Angel, Venancio Angulo, Agustín Muñoz, José Santiago, Manuel Morales, as well as the two Olartes "and others."

In November of 1819, Serafín Olarte united all his forces for an assault on Papantla. Beaten off by the royalists, he withdrew to the hills, but lost his life in a subsequent encounter. His body was recovered by the Spaniards, and his head, nailed to a pole, was exhibited at the Cruz chiquita, near Papantla.

The chief background for the drama of Olarte and his Totonac was Coxquihui; but by this term we should not understand the small municipal unit which bears that name today. In fact, the limits given by Bustamante[74] coincide roughly with those of nineteenth-century Totonacapan as a whole. The same author pointed out the utility of the terrain as a refuge and as a base for guerrilla warfare, suggesting that the Mexicans bear this in mind, in case of subsequent threats to independence. Not many years later, as a result of the French invasion, Totonacapan again became an asylum for Mexican patriots.

[73] According to Lerdo de Tejada (2:77–83), Naolinco, Misantla, and Papantla several times were headquarters for the leaders of the revolution, Rivera (1:345) makes similar statements and adds explicity (2:44) that Misantla was a constant insurgent asylum.

[74] Coxquihui "es un terreno muy montañoso y lleno de bosques . . . confina por el Oriente con el Golfo de Mexico, y por el Poniente con Mextitlan y Huasteca: esta rodeado de Oriente a Poniente por dos rios, el de San Pedro y San Pablo al Norte, y el de Nauhtla al Sur . . ." (Bustamante 5:42–43).

VARIOUS ASPECTS OF THE WAR FOR INDEPENDENCE

One aspect of the War for Independence which comes immediately to attention is the important participation of the native populace. Certain it is that in other parts of Mexico, native support was strong and decisive. But there, the largest and most enthusiastic contingent appears to have been formed by the great masses of Indians, reduced to peonage by the colonial system. This was not so in Totonacapan, where the principal centers of rebellion were Totonac pueblos removed from Spanish influence and from the socioeconomic system of the *haciendas*—pueblos which maintained their communal lands, and where the enemy, in the dual role of white and *hacendado*, scarcely existed.[75]

But it was precisely this isolated Totonac element—that farthest removed and most disinterested in colonial life—which participated so vigorously in the War for Independence. The motives are not clear from any of the contemporary documents or from later studies. The participation is the more inexplicable, since at no time during colonial history was there a major Indian uprising in Totonacapan, where unrest was confined to local boundary squabbles. Moreover, in 1810, Spanish authorities had attempted to improve the condition of Indian groups, precisely because they were considered potentially important in the imminent struggle.[76] At the same time, the viceroys were insisting on stricter compliance with the protective laws contained in the Recopilación de leyes de Indias.

It would be unwarranted to assume any genuine growth of national sentiment in Totonacapan at this time, since even today, it is little evident, at least among groups which have remained relatively aloof from Spanish and Mexican culture. An explanation will have to be sought elsewhere. It is possible that Bustamante (1:253) gives some insight when he reports that in the course of a royalist campaign in the highlands, about 1811, the Spaniards indulged in reprisals and cruelties, burning hamlets and shifting the population from one spot to another. Logically, such measures must have aroused resentment and perhaps influenced the Totonac to ally themselves with the rebel cause.

The results of Independence were not very evident in Totonacapan for a good many years. In accordance with its liberal principles, the Independence established the legal equality of all Mexican citizens; yet, at the start, this theoretical change could have had little significance for the Indian.[77]

Neither social structure, nor political organization, nor land ownership was greatly affected, for the time being, in Totonacapan, where, during the years following the Independence, the situation differed little from that of colonial times. Although we have found no record of further grants in Totonacapan, a great stretch of land near Papantla was given by the Mexican Government to General Guadalupe Victoria, in payment for his services during the War of Independence (Flores, p. 9). Officially, the lands in question probably were the property of the Spanish Crown, but even so, the grant must have reduced very considerably the amount of land available to the Totonac of the Papantla area. In fact, it probably directed settlement toward the west, for the tract of Victoria lay immediately east of the city. In Mexico as a whole, such grants strengthened the body of great landholders, by giving them extensive rural holdings.

We know nothing of the cultural changes which must have taken place in Totonacapan through displacement of combatants, greater contacts with people of other culture, and the new military organization. Unfortunately, there is no record of

[75] Years after the Independence, it is said of Papantla: ". . . los indígenas cultivaban sus tierras de comunidad y explotaban los productos silvestres . . ." (Flores, p. 9).

Bustamante (5:43) describes conditions in Coxquihui, presumably just prior to the War for Independence. He evidently is thinking of Coxquihui in a more restricted sense than that indicated in the previous footnote: ". . . su terreno está ocupado por tres o cuatro mil indios, y algunas castas con pocos blancos. Hace más de treinta años que se arruinó el unico pueblo que habia en él, por lo que han subsistido hasta ahora esparcidos por los montes y barrancas sin proporción de cura ni justicia."

[76] For example, in 1810, by royal decree, the Indians were to be freed of tribute and lands allotted more generously among them (Legislación mexicana 1:131). An 1812 decree abolished obligatory "personal service" and provided for further land allotments to adult male Indians (Legislación mexicana 1:396). Still a further decree, in the following year, abolished corporal punishment (Legislación mexicana 1:425).

[77] Mendieta y Núñez (p. 16) remarks that: ". . . siquiera en la época colonial se fraguó todo un sistema legislativo de elevadísimo espíritu en la Recopilación de las Leyes de Indias, para protegerlo, para reanimarlo; siquiera en aquel tiempo existió la posibilidad legal de su redención, pero a partir de la Independencia . . . el indio o quedó olvidado fuera de la ley, o quedó oprimido o explotado dentro de la ley."

how the Totonac adapted to war—for example, of their methods and organization, of their forms of combat, of the appointment of leaders, and so on. In fact, about all we know is that the Papantla area appears to have suffered materially, to judge from the account of a writer in that pueblo, in 1845.[78]

### THE MARIANO OLARTE UPRISING

The years following Independence were by no means tranquil in Totonacapan. Bausa (p. 337) reports repeated civil dissension in the Papantla area, but, as far as we know, the Totonac as such did not intervene. The only exception, and an important one, was the revolution of Mariano Olarte, in northern Totonacapan, with the Totonac themselves as instigators.

Mariano Olarte had served at the side of his father, Serafín Olarte, in the War of Independence. With the rank of second lieutenant (*alférez*), he had participated in the capture of Boquilla de Piedra, and he had been commended particularly by Victoria. Following his father's death, he continued the struggle as leader of the Totonac until 1820 (Flores, p. 12). After Independence, Victoria appointed him lieutenant colonel, a commission later confirmed by Vicente Guerrero and Santa Anna. Olarte remained in the Mexican army until 1836, when his participation in an unsuccessful conspiracy forced him to seek refuge among his faithful Totonac. The Olarte prestige had not disappeared, and that, in combination with the discontent of the natives of the Papantla area enabled him, at the head of a large Totonac force, to demand the surrender of the Papantla garrison, in November of 1836. After a brief battle, the authorities withdrew from the city, and Olarte entered triumphantly (Flores, p. 27).

The discontent behind the uprising is far from clear. Certain published documents (Flores, pp. 69–89) suggest it began with a church prohibition against Holy Week processions. But other factors such as inroads by *estancia* cattle on Totonac plantings and boundary disputes also were involved. In any case, when the Government decided to send a force against Olarte, he had assembled 5,000 natives, of whom 800 had firearms. Government troops recaptured Papantla the middle of December, of 1836, only to be trapped within the city by Olarte forces (Flores, p. 47).

The Government then decided to negotiate, taking advantage of the prestige of Guadalupe Victoria. But the discussions between the latter and Olarte were not successful. The latter demanded satisfaction for the natives of Papantla, and that he be allowed to live within the city, with the title, "father of the Indians." He further insisted on the adoption of a plan for a national federal organization. By solving local disputes to their satisfaction, Victoria managed to reach an agreement with some of Olarte's lieutenants. Abandoned by the majority of his men, Olarte raised the siege of Papantla and retired to Coatzintla, pursued by Government forces. With only 200 men, he gave battle and was defeated.

Once again, he withdrew to the hills and obtained support in several quarters: Temapache, Tihuatlán, Coatzintla, and El Estero (Flores, p. 58). Thereupon, Olarte launched a guerrilla war which extended as far as Huauchinango, Tulancingo, Chicontepec, Tuxpan, Jalacingo, Altotonga, and Misantla. During all of 1837, Totonacapan again burned in open rebellion. The following year, Olarte died in an encounter with Government forces, and as though he had been its only sustenance the revoluntary flame slowly died out.

### FROM THE OLARTE REVOLT TO THE REFORM

The defeat of Olarte followed the pattern of a typical native uprising and resulted in a sort of general Totonac surrender. As before, this involved retirement of population to spots where it was easy to evade the control and the demands of Mexican authorities. Bausa (p. 413) blames military conscription and excessive taxation for the flight of numerous Indians from the Papantla vicinity, and an official report of the Governor of Veracruz (Veracruz, 1845, pp. 38–40) gives the same reasons, noting that the Indians fled "from

[78] His statements are characterized by abundance of lamentation and paucity of concrete data: ". . . Papantla . . . fué en fines del próximo pasado y principios del presente siglo, hasta el año de 1812 en toda la costa de Barlovento, el punto mayor de atención por su numeroso vecindario, por sus producciones agrícolas y por sus exportaciones comerciales . . . pero se atravesó la revolución de 1810, que este pueblo abrazó con entusiasmo . . . y he aquí trabada una lucha ostinada y sangrienta por cerca de diez años, lucha que dió por resultado desastroso la desolación, el horror y la muerte . . . Se entronizó aquí el mas inaudito despotismo real, y él acabó de consumar la ruina de un pueblo admirado poco antes por sus riquezas naturales" (Bausa, pp. 376–377).

the towns to hide in the *barrancas* and most inaccessible forests."

Nevertheless, upon two occasions, the warlike spirit of the Totonac blazed again, before dying out, apparently definitively, at the end of the nineteenth century. One outburst was provoked by the Wars of Reform and by the French invasion; another, by the surveying commissions sent to Totonacapan during the dictatorship of Porfirio Díaz. A brief discussion of these events follows.

### THE REFORM LAWS

It has been remarked above that the mere achievement of Independence did not produce major changes in Totonacapan with respect to social structure, political organization, or property ownership. Spanish authorities simply were replaced by Mexican; and society, based largely upon communal landholdings, to a lesser extent on private ownership, continued as before. However, outside Totonacapan, and along its fringes, it is possible that peonage may have been intensified through the land grants mentioned previously.

Starting in 1856, the laws known as those of *desamortización*, or disentailment, produced great changes in Totonacapan, in the course of which the greater part of its colonial heritage vanished. This new era was opened by a decree of June 1856. Government intent was to destroy the inalienable quality of the property belonging to civil and ecclesiastical bodies and, through payment of a sum by the actual occupants, to convert the latter into owners. Under the law, communal lands of native pueblos were included, and such properties were to pass into private hands.

For a number of reasons, the outcome was quite distinct from the intent. In the first place, the decree allowed a period of only 3 months, during which the property was to be converted into private holdings. Lands which had not been transferred at the end of this time became public property, available to anyone upon application and payment, or available for Government grants.

In the second place, all communal lands not actually occupied or cultivated were considered public, and the decree provided for their sale, without taking into account the requirements of the Indians, whose system of milpa agriculture necessitated a tract of land far greater than that actually under cultivation at any given time.

In the third place, great numbers of Indians filed no claim for possession of their lands—because of isolation, of unfamiliarity with law and legal mechanism, and because there no longer existed officials whose responsibility was to protect indigenous interests.

The moment communal lands disappeared legally and claim for them as private property had not been filed, possession of such lands fell to the mercy of unscrupulous speculators who, supported by Government decrees, lost no time in despoiling the Indians. Moreover, even when the natives filed claim and actually received land grants, often they lost them—through usury, violence, or pseudolegal procedures.[79] *Haciendas* and speculators took it upon themselves to absorb the major part of the small properties created by the laws of *desamortización* and, at the same time, they managed to seize a large part of the Indian patrimony, owing to the classification of many communal lands as public property.

This legal and actual situation prevailed until new agrarian laws were formulated following the Revolution of 1910, when an effort was made to correct an old wrong and to restore their rights to the Indians. The importance of the old nineteenth-century laws is evident from an estimate "that in 1854 there were 5,000 villages of various types . . . holding in collective ownership ejidos aggregating around 45,000 square miles" (E. N. Simpson, p. 25).

### DISENTAILMENT

In Totonacapan, the liquidation of communal lands was long and difficult, extending from 1856, at least to the close of the century. Application of the laws apparently began on the outskirts of the area and rapidly became complicated by the French invasion and the establishment of the ephemeral empire of Maximilian. As a consequence, the historical picture is extraordinarily confused—on the one hand, because new Indian leaders appeared, fighting the French and their partisans; and, on the other, because of local uprisings against the republican authorities.

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[79] Quevedo (p. 12) observes that ". . . en sólo media centuria se palpó que en vez de que la condición económica de los labriegos indígenas mejorara se empeoraba; un gran número enagenaron sus lotes de terreno del reparto, o los abandonaron . . . El reparto de los Ejidos y demás terrenos del común de los pueblos fué por el contrario una medida perjudicial para el bienestar del indígena."

In the former case, Totonac chiefs, such as Simón Tiburcio (cf. ftn. 90, p. 54), Manuel Pérez, and others, with native troops, distinguished themselves in the war against Imperialist forces (Olivo, p. 388). With respect to internal strife, the causes are not mentioned specifically, but the chances are very strong that they resulted from efforts to reduce communal lands to private ownership. In any case, it is clear that there were mutinies and uprisings among the Totonac (Olivo, p. 391; Alatorre, pp. 25–26), of which the most important was the series in Misantla, particularly that of 1865.[80] Then, the situation was so acute that the republican authorities chose to surrender Misantla and the neighboring zone to the Imperialists, under truce, so that the latter might have the responsibility of protecting the "white" inhabitants from the Totonac.

That local resistance to the application of the land laws was stubborn and prolonged is clear from a report issued by the Governor of Veracruz, in 1871.[81] A decade later, another governor still faced the same problem. There was even greater pressure, a few years later, that communal lands be divided (Veracruz, 1887, pp. 41–42), and it is significant that the application of the land laws in Papantla coincided with a new Indian uprising, which affected not only Papantla, but also Misantla and Jalacingo (Veracruz, 1887, pp. 35–41). This agitation was under the leadership of a Totonac known as the *médico santo*, concerning whom, as usual, there is virtually no information. Once the rebellion was quashed, division of lands proceeded, now complicated by new problems: the laws of colonization (*leyes de colonización*) and the exploitation of oil deposits.

[80] During which ". . . asesinaron a cuanta gente de razón pudieron sorprender . . . y destruyeron y se robaron todo el material de guerra" (Alatorre, p. 26).

[81] "Ha estado luchando el Gobierno del Estado por realizar la división de terrenos de la comunidad de indígenas . . . Sin embargo, muy poco se ha conseguido . . . En varios pueblos se ha verificado la división de dichos terrenos; pero en comparación de los que aún quedan por dividir es realmente muy poco e insignificante lo que se ha hecho . . . se estableció una pena demasiado severa para estimular a los pueblos al cumplimiento de la ley, y a pesar de esta precisión nada se ha avanzado" (Veracruz, 1871, p. 50).

The same report adds (p. 52): "Es verdad que no sería remoto que llegare el caso en que deba usarse la fuerza y en que tambien se derramare sangre . . ."

Years later, the "reparto de los terrenos que pertenecieron a las extinguidas comunidades, solo en cuatro o seis pueblos se ha cumplido lo prescrito por la ley de la materia . . ." (Veracruz, 1888, pp. 39–40).

### LAWS OF COLONIZATION

Sparse population, combined with an abundance of land in the new republic had motivated the general law of colonization of 1826, under which it was hoped, through an offer of free lands, to attract numerous immigrants and, at the same time, to interest Mexican citizens in increasing agricultural production. To these ends, the National Government left each State free to legislate (Zavala 2:137), in accordance with local conditions.

Attempts at colonization did not begin to produce marked results until the last quarter of the nineteenth century. In 1875, the governor authorized the formation of commissions to survey public lands. They were paid in land, each commission being allowed to delimit a maximum of 2,500 hectares, to a third of which it had claim for its services.

The laws of colonization and the activities of the commissions were fatal to the remnants of native communal—and even private—lands.[82] All communal lands which had not been divided, and all private lands not legally registered—in short, the great majority of native holdings in Totonacapan—were considered public property, to be measured by a survey commission, which was to reserve a third of the land for itself.

The grabbing of Indian lands reached unprecedented proportions. Between 1881 and 1889, 32,240,373 hectares were surveyed by only 29 companies or individuals; these received as recompense, 13 million hectares, and acquired, by purchase, 15 million more (Mendieta y Núñez, pp. 75–76). Accordingly, *latifundismo*—a heritage of colonial times, accentuated by the War of Independence and the Reform laws—grew vigorously at the expense of Indian groups.

To date, no study has been made of the application of the surveys nor of the outcome in Totonacapan. Nevertheless, the elder residents of Tajín recall the survey clearly and the bloodshed which it provoked (ftn. 88, p. 54). It seems likely that conditions in the Papantla zone may be taken as representative of what must have happened, to

[82] According to the law of 1863, public lands include ". . . los terrenos de la República que no hayan sido destinados a un uso público por la autoridad facultada para ello por la ley ni cedidos por la misma a título oneroso o lucrativo a individuo o corporación autorizada para adquirirlos."

a greater or lesser degree, elsewhere in Totonacapan.

The laws of colonization and the activities of the survey commissions did not terminate until 1902, when a new law nullified preceding ones. But until 1915, no measures were taken to recover holdings which had been acquired contrary to the spirit of the law of 1856, and which had been procured in 1876, or subsequently, when the surveys affected the property of native pueblos.

Current forms of land ownership in Totonacapan are a direct outcome of the laws of reform and of colonization, followed by the agrarian laws of the Revolution. In short, communal property has disappeared; and side by side, are private holdings as well as lands held under the new ejido system. Among the Tajín Totonac, land is privately owned, although several adjacent communities operate under *ejido* organization.

### OIL EXPLOITATION

The rich petroleum deposits in parts of coastal Totonacapan attracted attention relatively early. About 1868, Autrey explored the Papantla area, and in 1869, wells were drilled on the ancient *hacienda* of Congas, now known as Furbero, since an Englishman, Furber, was in charge of the enterprise (México, El petróleo de México, p. 13).

In 1901, Government concessions were extended to oil companies and exploitation began on a large scale. At this time, activities centered farther to the north, in the Huasteca. However, in the early 1930's, with the discovery of rich deposits in the Poza Rica district, the Papantla-Coatzintla zone was invaded by major oil operations. In Tajín itself, several tests were made; a well was drilled; and roads were opened to permit passage of heavy machinery from Papantla and Coatzintla. After 7 years, the Tajín zone was abandoned, although the federally owned oil company still holds title to two parcels of land in the community. Moreover, during 1949, two wells were drilled in San Antonio, on the very fringes of Tajín, and it seems likely that oil operations will make further inroads into Totonac territory in the vicinity of Papantla and Coatzintla.

### SUMMARY

The most visible results of the laws of colonization, of the land surveys, and of oil exploitation are related to the chronic problem of Totonacapan—that is, to the dispersal of population toward the heart of the zone. With the passage of years, each dispersal faced a progressively more limited area in which to take refuge and, as a consequence, less attractive terrain.

One undoubted result has been major acculturation, especially in the realm of property, and in political and social organization. As we have seen, the system of communal lands current during colonial times was essentially a continuation of pre-Conquest conditions. Its decadence and disappearance, during the first century of independence, caused the demise of associated forms of political and social structure. Moreover, Totonac groups which had remained aloof from Spanish contact came more and more into the sphere of Mexican influence, particularly in political and social aspects.

The present situation in Tajín may be considered typical of the cross which has resulted from all these influences, to which were added further influences emanating from the Revolution of 1910.

## THE TAJIN TOTONAC

### ENVIRONMENT

The State of Veracruz includes a long, narrow strip of coast along the Gulf of Mexico and part of the adjacent highlands to the west. Just north of the central part of the State is the provincial center of Papantla, and 6 or 7 km. southwest of it lies Tajín (map 5). The elevation is low; Papantla itself is about 300 m. above sea level, and Tajín probably is close to a hundred meters lower.[83] This is rugged terrain, which lies between the

[83] We took a small series of readings, over a period of time, with a Paulin altimeter. Naturally, these varied widely, according to temperature and storm conditions. Our guess at 200 m. for the elevation of Tajín is based partly on these readings, partly on the fact that the trail from Papantla to Tajín descends sharply.

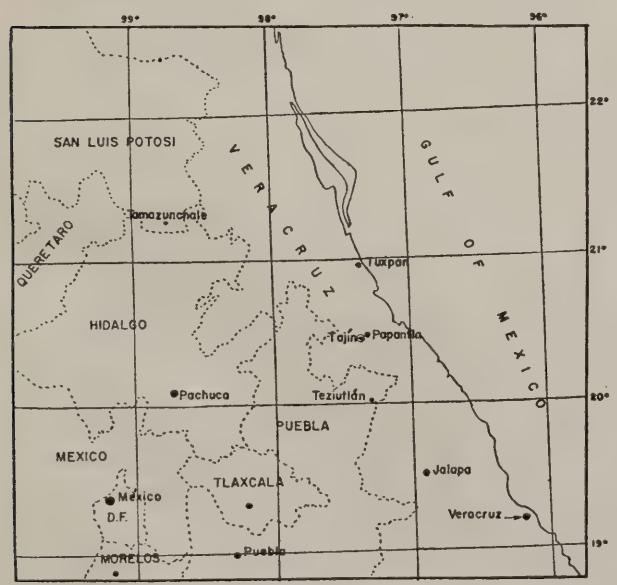
TABLE 2.—*Annual precipitation, Papantla*[1]

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1925 | | | | | | | | 76.4 | 206.7 | 120.6 | 65.0 | 43.7 |
| 1926 | 29.5 | 10.2 | 48.4 | 54.8 | 98.0 | 300.6 | 204.4 | 95.7 | 288.1 | 172.1 | 35.1 | 19.3 |
| 1927 | 73.9 | 37.1 | 24.8 | 27.9 | 172.9 | 218.9 | 125.0 | 67.1 | 271.0 | 227.5 | 15.0 | 71.4 |
| 1928 | 28.1 | 52.2 | 11.1 | 3.0 | 152.7 | 236.3 | 95.5 | 81.5 | 195.1 | 175.6 | 211.6 | 99.0 |
| 1929 | 13.5 | 21.2 | 37.0 | .5 | 74.6 | 266.7 | 188.5 | 120.5 | 377.5 | 110.0 | 118.9 | 186.0 |
| 1930 | 69.5 | 38.5 | 13.8 | 53.2 | 79.5 | 92.1 | 144.2 | 15.0 | 49.0 | 526.2 | 62.1 | 58.5 |
| Average | 42.9 | 31.8 | 27.0 | 33.9 | 115.5 | 222.9 | 151.5 | 76.0 | 231.2 | 222.0 | 84.6 | 79.6 |
| 1931 | 45.9 | 61.0 | 34.1 | 66.7 | 354.2 | 204.2 | 356.7 | 175.5 | 480.7 | 185.7 | 35.5 | 74.7 |
| 1932 | 27.5 | 27.0 | 39.4 | 12.0 | 91.2 | 82.7 | 188.5 | 248.0 | 131.2 | 296.0 | 64.7 | 35.7 |
| 1933 | 49.7 | 31.7 | 10.1 | 26.9 | 7.5 | 73.5 | 335.9 | 468.2 | 310.2 | 152.2 | 84.5 | 6.2 |
| 1934 | 72.1 | 22.2 | 45.5 | 185.4 | 64.1 | 48.5 | 40.0 | 77.6 | 341.1 | 107.7 | 115.5 | 108.4 |
| 1935 | 61.0 | 22.7 | 1.5 | 61.8 | 146.4 | 235.0 | 179.9 | 151.5 | 285.5 | 245.7 | 41.8 | 86.7 |
| 1936 | 50.4 | 30.8 | 56.0 | 114.7 | 81.5 | 87.3 | 294.5 | 181.0 | 222.2 | 430.0 | 95.5 | 12.4 |
| 1937 | 54.0 | 43.5 | 123.1 | 22.4 | 70.8 | 85.7 | 113.3 | 59.8 | 125.3 | 236.5 | 75.7 | 131.3 |
| 1938 | 68.0 | 93.1 | 25.1 | 94.7 | 27.0 | 55.3 | 25.8 | 154.3 | 261.5 | 68.0 | 83.3 | 27.5 |
| 1939 | 75.1 | 29.2 | 98.9 | 66.0 | 96.9 | 120.7 | 91.8 | 73.8 | 320.0 | 165.2 | 69.6 | 50.3 |
| 1940 | 37.8 | 5.7 | 52.6 | 56.7 | 59.5 | 139.7 | 100.4 | 23.9 | 83.4 | 44.2 | 126.1 | 117.0 |
| Average | 54.1 | 36.7 | 48.6 | 70.7 | 99.9 | 113.3 | 172.7 | 161.4 | 256.1 | 193.1 | 79.2 | 65.0 |
| 1941 | 81.6 | 54.8 | 79.4 | 73.7 | 126.7 | 207.7 | 142.3 | 94.0 | 314.5 | 154.1 | 116.1 | 72.5 |
| 1942 | 54.1 | 32.2 | 38.7 | | | | | | | | | |

[1] The record is in millimeters. These figures have been made available through the courtesy of the Tacubaya office of the Servicio Meteorológico Mexicano.

narrow strip of coast plain and the base of the great escarpment of the central plateau. There are no outstanding peaks, no great scarps, and no deep valleys, yet there is virtually no level land. Low hills succeed one another with few breaks (pl. 1). Papantla itself is huddled among a cluster of hills, and most of the land within the limits of Tajín is broken.

There are no major streams in the immediate vicinity of Papantla and Tajín. The Río Cazones runs considerably to the north and the Río Tecolutla lies well to the south. Tajín has a number of minor arroyos which drain south to the perennial Arroyo de Tlahuanapa which, in turn, drains to a tributary of the Tecolutla. There are many annual springs, but few perennial ones. Attempts at well digging[84] have been made in Tajín, with little success; the only moderately useful well cannot be relied upon in time of real water shortage. For many years, Papantla has asked for Federal aid to solve her chronic water problem; and during years of scant rainfall, Tajín suffers acutely (pp. 70–71).




MAP 5.—The location of Papantla and Tajín.

Precipitation is highly irregular—so much so, that averages are misleading (table 2). For example, April of 1929, had 0.5 mm. of rain; but April of 1934, 185.4 mm. Similarly, in September of 1930, there were 49.0 mm. of rain; but September of the preceding year is credited with 377.5 mm.; and of the succeeding year, with 480.7 mm. It is small wonder that the Totonac farmer is mightily preoccupied with the rainfall and that one year he may have abundant crops, the next, virtually none.

The bulk of the precipitation falls between May and October, in the form of violent cloudbursts (*aguaceros*). These begin in earnest during June. They beat through the walls and roofs of the houses, and they wash out the fields and the trails. Sometimes they leave the latter in such bad condition that pack animals mire and perish in the

[84] The sixteenth-century Relación de Papantla says, "y tienpo de seca no tiene casi agua." It makes no mention of wells, for which there appears to be no Totonac term.

mud. Following the rains of 1947, the skeletons of four such ill-fated beasts were strewn along the trails.

As the *aguaceros* taper off, they are replaced by a light but persistent drizzle, known as the *chipichipi*, which may continue virtually without a break through the fall, into spring. Literally, no month of the local calendar consistently is free of precipitation, and about the only time a moderate occurrence of clear, sunny weather is expectable is from February through April. Yet Bishop Mota y Escobar (p. 234), who visited Papantla early in February of 1610, writes plaintively, "It rained on me in this town eight days without stopping." Papantla has the dubious distinction of having an annual average of fewer than 60 clear days and of more than 150 overcast days (México, Atlas climatológico).

During the spring months there may be a brief drought, which assumes catastropic proportions if it continues through May. The humus topsoil is thin—in many places, not more than 50 cm. in depth. It overlies a limestone formation which presumably is highly absorbent, so that with a few weeks of sunny weather, the surface moisture is evaporated. Accordingly, the ground cracks open; the springs and small arroyos dry; and the fields are parched. For want of water, the vanilla blossom may not open, and the chief cash crop thereby is lost; the maize wilts, and the staple food fails. The last excessive drought took place in the spring of 1945, but in May of 1948, the fields were so dry that two—one of cane and another of pasture—caught fire. The supply of potable water will be treated in greater detail elsewhere (pp. 70–72).

During most of the year, the humidity is high (México, Atlas climatológico). Because of this, the heat from May through August may be oppressive (table 3). However, in December and January, the temperature sometimes averages less than 18° C. Combined with the humidity, the result is uncomfortably moist and chill. During the season of 1947, our clothing sprouted mold; our typewriters and cameras were speckled with rust; and our stationery supplies were so limp they hardly could be handled.

In summary, we hold no brief for the local climate.

Prevailing winds are from the north and accordingly are known as *nortes*. These Gulf coast winds are famous throughout Mexico and are mentioned at length in many of the old accounts, largely because of the hazards to navigation. In the fall, the *nortes* arrive, lashing the countryside and bringing cold rains. Informants distinguish between wet and dry winds. Those of the spring are dry, and in March and April, heavy winds may do considerable damage to maize fields.

Scenically, the country is very beautiful (pls. 1, 2). The rough hills are covered with heavy tropical rain forest, green and lush throughout the year. Of virgin stands (*monte alto*),[85] with

[85] In Totonac, kiwi is tree; kakiwín, *monte* or forest. There seem to be no special terms for *monte alto* and *monte bajo*.

TABLE 3.—*Annual temperature, Papantla* [1]

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sep. | Oct. | Nov. | Dec. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1925 | | | | | | | | | 26.4 | 25.9 | 20.6 | 15.8 |
| 1926 | 15.9 | 20.7 | 22.4 | 24.2 | 26.8 | 27.9 | 27.2 | 27.7 | 26.7 | 25.7 | 21.2 | 21.1 |
| 1927 | 19.7 | 22.5 | 22.3 | 26.3 | 28.9 | 28.4 | 27.2 | 27.6 | 25.9 | 24.3 | 22.9 | 18.1 |
| 1928 | 17.4 | | 22.7 | 23.6 | 25.8 | 27.9 | 26.4 | 26.9 | 25.5 | 24.7 | 21.0 | 16.1 |
| 1929 | 18.9 | 18.9 | 22.6 | 27.0 | 26.8 | 26.7 | 26.1 | 26.1 | 25.5 | 24.2 | 19.8 | 16.9 |
| 1930 | 16.1 | 19.7 | 21.3 | 25.5 | 28.5 | 27.9 | 27.4 | 28.5 | 28.9 | 25.0 | 20.2 | 16.6 |
| Average | 17.6 | 20.4 | 22.3 | 25.3 | 26.9 | 27.8 | 26.9 | 27.4 | 26.5 | 24.9 | 20.9 | 17.4 |
| 1931 | 16.7 | 19.3 | 19.9 | 21.8 | 25.5 | 27.2 | 27.3 | 26.4 | 26.2 | 25.1 | 22.5 | 18.9 |
| 1932 | 20.0 | 22.3 | 20.9 | 25.7 | 27.3 | 29.5 | 27.6 | 28.0 | 27.3 | 23.3 | 19.3 | 19.4 |
| 1933 | 19.5 | 20.1 | 23.3 | 27.0 | 29.7 | 27.6 | 29.0 | 26.5 | 26.1 | 24.7 | 22.0 | 20.4 |
| 1934 | 19.8 | 21.2 | 21.0 | 25.4 | 26.9 | 28.8 | 28.3 | 28.2 | 27.4 | 26.6 | 24.1 | 19.5 |
| 1935 | 22.2 | 20.0 | 25.0 | 28.0 | 28.8 | 27.6 | 27.2 | 27.4 | 26.6 | 25.0 | 23.5 | 19.3 |
| 1936 | 19.4 | 20.0 | 23.8 | 24.4 | 26.3 | 27.9 | 26.4 | 27.0 | 26.9 | 24.2 | 19.6 | 19.5 |
| 1937 | 21.6 | 21.9 | 21.3 | 25.8 | 26.8 | 27.5 | 26.9 | 27.5 | 27.0 | 24.8 | 22.1 | 19.2 |
| 1938 | 18.9 | 20.7 | 26.2 | 25.5 | 27.5 | 27.0 | 27.8 | 27.9 | 25.9 | 24.3 | 19.7 | 19.0 |
| 1939 | 19.7 | 20.1 | 22.1 | 24.3 | 26.8 | 26.8 | 27.0 | 26.9 | 25.3 | 23.6 | 18.8 | 19.6 |
| 1940 | 15.6 | 18.7 | 21.0 | 24.0 | 25.6 | 27.2 | 26.4 | 27.9 | 26.5 | 24.4 | 21.1 | 19.6 |
| Average | 19.3 | 20.4 | 22.4 | 25.2 | 27.1 | 27.7 | 27.4 | 27.4 | 26.5 | 24.6 | 21.3 | 19.4 |
| 1941 | 18.5 | 19.1 | 20.4 | 25.0 | 26.3 | 27.5 | 28.2 | 27.4 | 26.4 | 25.6 | 21.3 | 19.7 |
| 1942 | 17.5 | 19.5 | 21.0 | | | | | | | | | |

[1] The record is in centigrade. These figures have been made available through the courtesy of the Tacubaya office of the Servicio Meteorológico Mexicano.

their precious woods, such as cedar and mahogany, few remain at Tajín. The examples we have seen have a somber magnificence. Undergrowth is not particularly heavy, perhaps because little sun penetrates, but the tall trees are festooned with a great wealth of vines, and sometimes with orchids and bromelia. Map 6 gives a rough indication of the patches of *monte alto* which remain at Tajín, but with the exception of three plots on the southwestern fringes, these are of very limited extent.

Most of the land has been cleared in years past, and the areas not actually under cultivation are covered by second-growth timber, known as *monte bajo*. When virgin stands are felled, reforestation is relatively slow, and the first vegetation to appear is a profusion or "*ortiga*, wild *papayo* [Appendix C, Nos. 56, 172], and a plant called Santa Catalina." However, second growth, when cut, returns with rapidity, to the great inconvenience of the Totonac farmer. The field which is being cleared in plate 6 has been abandoned only 25 to 28 years, yet the size of the trees and the density of the vegetation are impressive. Owing to this rapid reforestation, Tajín has virtually no erosion problem, although a lone farmer complains that there is considerable washing in his hillside milpa.

As the name implies, *monte bajo* does not reach the elevation of the virgin forest. To a certain extent, it includes some of the same trees and vines, but it is, moreover, characterized by a dense mass of shrubs and low trees. *Monte alto* appears effectively to resist the introduction of extraneous plants, but once it has been cut, the way is opened for a large assortment of intrusive elements. As a consequence, the plant associations are largely distinct. At the end of Appendix C will be found a list of trees and vines which Modesto González considers characteristic of virgin forest.

The Totonac are well aware of the danger of losing a clearing to grass, yet this seems not to be a very grave threat in Tajín. When a maize field is abandoned because of weed competition, the blame is not laid on grass. Naturally, if grass sod once becomes established, it is many years before the *monte* is able to regain possession of the plot, and during this long interval the field cannot be exploited. The incursion of grassland is discussed in greater detail in connection with agriculture (p. 114).

The Totonac make fairly extensive use of their plant resources, as will be seen below (pp. 81–84). The fauna, however, is less susceptible to exploitation. There no longer are any game animals worthy of mention in the vicinity of Tajín. Formerly, it is said, when the pyramids were forested, there were deer and peccary; and when *monte alto* still was extensive, jaguars were common. But these days are long since past, and of game animals, even a lone rabbit is sufficiently rare to cause excitement.

Birds are plentiful and many are recognized by the Totonac; a partial list, with some suggested identifications, will be found in Appendix D. Snakes, both abundant and varied, include the *coralillo*, the *mazacuate*, and the *cuatro narices*. Although various of our acquaintances have suffered from snake bite, we know of only one fatality. Also venomous, but never fatal, is the sting of the scorpion (*alacrán*); the latter is plentiful, especially in the thatched roofs.

Of insect pests, some providentially are wanting, others depressingly abundant. Strangely enough, flies are rare. Mosquitoes are found only in certain parts of Tajín, generally near springs, where they are both a nuisance and a menace, because of malaria. Fleas are said to abound during Holy Week. At this time, the *laurel* (Appendix C, No. 130) blossoms, and since it is believed to breed fleas, it is held directly responsible. Bedbugs are unknown. Head lice are not infrequent, especially among children, and during our stay, occasioned a bitter spat between parents and the local school teacher. What apparently is an infinitesimal form of chicken louse (*coruco*, mát¢aiya?) sometimes is troublesome, especially to children. Fowl ordinarily have the run of the house, and the latter becomes infested unless well swept. Since many Totonac sleep on palm mats spread on the earth floor, the lice thus have access to them, and from the bites unpleasant sores may result.

The repertoire of pests also includes ticks, both large (*garrapata*, ištakálan, lanqaškapa) and small (*pinolillo*, lak'suškapa), which rain upon one as he passes along the narrow forest trails, particularly in the spring. If not removed promptly, they cause tremendous discomfort. So also do almost invisible red insect pests known as *aradores* (skatínat). They attack children and adults alike; they also infest baby chicks, sometimes causing death.

MAP 6.—Stands of virgin forest in Tajín.

Land divisions are explained in detail in the text (pp. 54–58). Stippled areas lie outside Tajín and have been largely ignored by our informants, Modesto González and Donato Santes. Diagonal hatch indicates virgin forest, regardless of extent. Except for three nearly intact plots (Nos. 178, 179, 186), on the southwestern fringes of Tajín, all stands are inconsequential commercially.

The itching is severe, and children, scratching with grubby hands, often turn *aradores* into nasty sores. Ants crawl over the youngsters who sleep on the floor and feed on the sores. The end result is not attractive.

Chiggers (*niguas*, stokono) occur in quantity about houses where swine have been kept. Many Totonac go barefoot, and these pests penetrate the feet, especially about the nails. Careful parents inspect their offspring almost daily for ticks, *aradores*, and chiggers; but one lad, whose family gives the matter little attention, is scarcely able to hobble because of chiggers embedded in his feet.

## PLACE NAMES

Our impression is that the Tajín Totonac are well adjusted to the local environment and that, in all probability, their residence in this, or nearby terrain, is of long standing. Accordingly, the virtual want of Totonac place names is quite remarkable. The few Totonac names we have been able to record for settlements are listed below; it will be noted that several are derived from trees.

*Coxquihui.* This is said to be the Totonac name of a wild cane "thicker than *carrizo*." It does not occur at Tajín, hence no specimen was available for identification.

*Escolín.* Two small settlements, one in the municipal unit of Papantla and one in Coatzintla, derive their names from a *monte alto* tree, known in Totonac as skolín (Appendix C, No. 338; subsequent numbers in parentheses, following the name of a plant, refer to this same appendix).

*Ojital.* This community is said to be called kajukšúpun (*lugar de muchos ojites*). The *ojite* (No. 98) is another *monte alto* tree. We suspect that the native term may be a translation from Spanish and not the reverse; in conversation, Ojital generally is called by its Spanish name.

*Papantla.* Among the Tajín Totonac, Papantla is known merely as katčikín (pueblo; čiki', houses). When speaking Spanish, a Totonac translates literally, calling Papantla, rather grandly, *el pueblo* (the town).

Papantla probably is not a Totonac term (Patiño, p. 15), although a sixteenth-century account says that it was founded by a chief for whom the town was named (Relación de Papantla). One commonly hears (cf. Patiño, p. 15) that when the area was forested, there were many birds known as *papanes* (Appendix D, No. 25) and that as one passed they raised a great clatter. From this, some informants believe that the modern name may be derived.

There is a further suggestion that the name might come from *papán*, an unidentified tree; and two nineteenth-century writers (Bausa, p. 380; Anonymous, p. 105) translate the term as *luna buena* (good moon; the Totonac term for moon is papa).

*Tajín.* Concerning the origin of this name, there also, are numerous versions. One informant says that a column of smoke, seen from afar, is called jin, in Totonac. When there are several such columns, the name is tajín. Accordingly, a free translation would be "columns of smoke, seen from afar." It is not difficult to account for columns of smoke, because Totonac religious observances apparently included a perpetual fire (Las Casas, p. 461), and hearths are found adjacent to ancient Totonac religious structures (García Payón, 1949 c, p. 647).

A slightly different etymology is suggested by Palerm, who notes that an eighteenth-century document (AGN, No. 5) speaks of "*tierras nombradas Catahín.*" We may assume that "hin" or jin means smoke. Another document (AGN, No. 4) mentions two places, "Catachagni" and "Catapozgatayanque"; and the same document translates these terms respectively as "*lugar aplanado con torta de Cal*" and "*el Rajadero.*" It is possible that "cata" may be a prefix indicating place. Accordingly, the translation of "Catahín" would be "place of smoke." In this case, Tajín might be a modern contraction of Totonac "Catahín."

Moreover, in Totonac legend, 12 old men, known as tajín, live within the ruins of the famous pyramid, and it is they who control the thunder. Some informants would derive the place name from these legendary beings. In any case, the frequently cited translation of *rayo* or *trueno* (Gazeta de México, p. 350) probably is inaccurate.

*Talaxca.* The little Totonac settlement of this name, north of Papantla, is called after a cultivated tree, talášk a (No. 195).

*Tlahuanapa.* Both the settlement and the arroyo of Tlahuanapa, immediately south of Tajín, are called šakášk an in Totonac; we could obtain no translation.

This exhausts our list of pueblo names, although for several towns in the Sierra de Puebla, Lombardo Toledano (p. 14) gives Totonac equivalents. Krickeberg (p. 160) lists four place names which he thinks possibly of Totonac origin: Achichipec, Altapan, Chintapan, and Taxca. For the first, our informant could suggest only a vague resemblance to sipe (*cerro*, hill); for the second, naktapak (*cerro o montículo*, hill or rise, either natural or artificial); for the third, nothing whatsoever. For the last, he suspects a derivation from taškat' (*miel*, honey).

In the Tajín area, the want of Totonac place names is not confined to pueblos. Ordinarily, hills, fields, and other similar spots seem to be equally innocent of names. If one wishes to refer to a certain maize field, he identifies it by the name of the owner or of the planter. This is in marked contrast to western Mexico as a whole, where virtually every field, pasture, and hill, however, insignificant, has its individual name. Three local

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hills may have native names; others, as far as we could discover, are unnamed, either in Totonac or Mexicano:

From Tajín to Papantla, the trail climbs a sharp grade, known locally as the Cerro de Taracatloco. One informant thinks that the name given "by the old people" was talakáłok, but he is unable to offer a translation. Another maintains that the name is not Totonac; "no hills have Totonac names."

A more reliable case is that of a hill on the trail to Palma Sola, where a long climb is known as neq?šakána? (neq?, *ahí*, there; šakána, *raspa sombrero*, scratch hat, name of an unidentified tree). Formerly, it is said, the tree was plentiful on this hill.

Another hill—which is also an archeological site—near Santa Catarina and La Laja, in the Espinal zone, is said to be known in Totonac as špáyat. The latter is the name of an unidentified vine—one "which stings when one does not see it, but does not sting if observed."

Perhaps because of the preoccupation with the water supply, arroyos receive more attention:

It has been noted above that the Arroyo de Tlahuanapa has a Totonac name, said to be untranslatable. A tributary of it is known as skuyátpuška (skuyát, *lumbre*, fire; puška, *arroyo*). Another small stream is known as šapuškaukuni (puška, *arroyo;* ukún, the *pimienta* tree, No. 30). Still another is called pulq?maniápuška (pulq?maniá, *hondo*, deep; puška, *arroyo*).

The little stream which runs through the heart of modern Tajín generally is called the Arroyo de Ortiga (nettle arroyo). The Totonac equivalent is said to be šapúškaka (puška, *arroyo;* kájni?, *ortiga*, nettle). This, we suspect, is a translation from Spanish to Totonac.

Of other place names, only one remains:

A spot on the trail to Papantla, near a group of houses known as La Finca, is called nek?sawál (nek, *allí*, there; sáwal, *zapote negro*, No. 125). A *zapote* tree once stood at this point; although it has disappeared, the name endures.

This dearth of names for geographical features evidently does not characterize the Totonac zone of the Sierra, for which there is ample evidence of native place names which were current a couple of centuries ago. The data are contained in a series of documents found by Palerm in the Archivo General de la Nación. Most deal with delimitation of pueblo lands, between 1716 and 1719; at that time, at least, the Sierra Totonac manifestly were well supplied with local place names.[86]

In short, despite the general impression that Totonacapan is innocent of Totonac place names (Krickeberg, p. 30), it is evident that as late as the eighteenth century, the Sierra Totonac had an abundance of native terms for geographical features. Moreover, it is said that Totonac names exist today for most of the highland pueblos, although the Mexican names are more generally

[86] In the paragraphs below, the original orthography, both Spanish and Totonac, has been preserved, except for modern pueblo names, whose spelling follows the 1930 census. It will be noted that a number of terms start with "nac," which apparently means *en* (Patiño, p. 31) or "in."

The earliest record dates from 1645 and is contained in a document which treats of differences between Chumatlán and Zozocolco (AGN, No. 4). It mentions, in the vicinity of Jalostoc, an "aroio grande llamado ytacaquian," which is said to mean *"en los límites del pueblo."*

The records for 1716 are extensive and are contained in a series of documents which describe the litigations between Ixtepec and Tapayula on the one hand and Atlequizayan on the other (AGN, No. 2). Place names are abundant and for some a Spanish translation is given.

Boundary between Coatepec and Tapayula: Nactagxgt, Nacmachana, sinsoyuco, Nacxaca, Nacpoxní, Yslogotnohogo, Nacmaxnatalpan.

Between Camocuautla and Tapayula: Nacxaquín, cacíxtama yxuhuaní, Nalcxui nataxgoit.

Boundaries of San Miguel, a subject of Xonacatla: tonco, pau, littlín.

Those of San Bartolomé, a subject of Hueytlalpan: majchanac, maxnitalpan, Taxcon (*"nombre de un parage"*), Tamax guaxní, acoxquí, xasquín. In this same connection, the document mentions a river, which in "their language" is called "La paxtoca."

Boundaries of Ixtepec: *"el parage nombrado* laguextog," Yxlipachococantzcan, Guetzgaya, Cahalan.

Boundary between Ixtepec, Atlequizayan, and Xonacatla: Nacxaca, Cashuacan, Nacatzan, o Pau [*sic*], Axcon, Naclítzin, Nacpolcoyat, Nacquelthuaxni, Nacthoncoat.

The limits of "San Francisco Tapaiula" [Tapayula], which bounds San Bartolomé, are said to be as follows: Nagchanalí, Naczpatan, Nacchajalaga, Nactoquiguichic.

Those of "San Pedro Comaquautla" [Camocuautla] are: Nacagsaguacxcan, Naccaguitlan, Nacshpauh, Nacagchogotno.

Now comes a long series of names of landmarks separating "San Sebastian Tostla" [Tuxtla] from various settlements. The document states specifically that the names are Totonac and gives, in most cases, the Spanish translation, which appears below in parentheses.

With the barrio of San Martín: Tonco (*Luzero*), Nacmosínc (*Cueba*), Tangana (*el Sumidero*), quintzí (*el palo duro*), Nacxípot (*el plumero*).

With the barrio de La Concepción: Nacpixaía (*queso delgado*), Xoqúilo gua (*culebra de benado*).

With Atlequizayan: Naclarax (*el Naranjal*), Guesgalla (*entre dos Serros*), Atan (*el palo duro*), Nactlitlin (*el cantadero*).

With Xonacatla: Nacalpatag (*cabeza de chachalaca*), Sachoncal (*el espantajo*), Mosínchochot (*cueba de agua*) [*sic;* see below], Coneapan (*criatura de agua*).

With "San Francisco Casguacan" [Caxhuacán]: Mosínchochot (*Aguila de Cal*) [*sic*], cococ (*el Arenal*).

With the barrio of Huehuetla: Nalal poloc (*serro abujereado*), Nacliguextoc (*donde se encuentran dos arroyos*).

With Hueytlalpan: Nactolon (*piedra parada*), Nacsaxan [no translation], Naccahalan (*donde suenan las piedras*), Nacixlipazgonchon (*calentadero de sopilotes*).

With Xonacatla: Galnaxipit (*serro de cacalotes*), Acpoí (*donde sosiega el aire*).

Additional boundary of Tuxtla: Nacíxlipachochocacac (*nido de conejos*).

The same series of documents includes one, dated, however, 1718, which gives the landmarks separating Ixtepec and Hueytlalpan: tzangana, xípot, Pixaía, Alpalcot, Alaxos, Caxcaya, littlin, zgata chochot. However, for certain points along this boundary, very touching Spanish translations are given: lamacoxomíxit (*Paz*), Matalahlot (*Amistad*), Cacztahuíslat (*quietud*), tahaxni (*descanso*), ztactayat (*escarmiento*), tacaechit (*felici-*

used (Lombardo Toledano, p. 14). Palerm, who spent several days in the Sierra de Puebla, determined that the three barrios of Eloxochitlán still bear Totonac names: puskan (*lugar llano*); tankan (*abajo*); kijilápan (*en una loma*).

The dearth of native place names in the Tajín area is difficult to explain, since Totonac is widely spoken and since the modern community has been established close to 75 years. Although relatively brief, this period certainly should provide ample time for the development of a local terminology. But the fact remains that with the few exceptions given above, natural features about Tajín seem to be devoid of names—either Totonac, Mexicano, or Spanish.

It is understandable that Mexican pueblo names might have been preserved more readily than the Totonac equivalents,[87] and there is no doubt that throughout Totonacapan, towns generally bear Mexican designations. The explanation lies, we suspect, in an old and somewhat obscure Nahuan element in Totonacapan, which has been discussed previously (pp. 6–7, 19–20, 23–24). We doubt that the preponderance of Mexican pueblo names results from the intimate ties between Totonacapan and Tlaxcala (Waitz, cited by Krickeberg, pp. 30), from the relatively late conquest by the Triple Alliance, or from Spanish evangelization—although all these must have contributed to the use of Mexicano as a lingua franca in Totonacapan.

## THE MODERN COMMUNITY

Because of the dense vegetation, a casual visitor to the famous archeological site of Tajín has no inkling that half an hour on foot, south of the main pyramid, there is a cluster of 35 households about an open plaza. This cluster is the heart of the modern Totonac community of Tajín. Here the school is situated and here the political administration is centered. By far the greater part of the people live, however, in scattered houses, in clearings in the *monte*, effectively hidden from those who travel only the principal trails.

Modern Tajín has a relatively brief history. Although we doubt that the entire zone was depopulated with the destruction of the ancient center, about A. D. 1200 (p. 14), there is no proof, as far as we know, that the modern Totonac of that zone are lineal descendants of the builders of the pyramids. As a matter of fact, as will be seen below, the present population has been culled from a wide area about Papantla.

### COLONIZATION

Informants do not have a very clear picture of the establishment of the modern community. During the middle of the last century, "few people" lived in the Tajín area. At that time, "the land was not privately owned," and the few Totonac "planted wherever they liked, without asking permission of anyone." The head of one family was Ignacio de la Cruz; another was Miguel Andrés, from the Comalteco area; a third was a woman named Carmen Juárez, who lived with her three nieces. All were Totonac; but a lone man, known merely as Agustín, "when drunk, claimed to be Italian."

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*dad*), Tagtominat (*Union*), caglilhínat (*esperanza*), tlanlíxpotot (*buen fin*). It is important to note that the document itself indicates that the latter names, with the abstract qualities, were assigned by the Spaniards who made the survey.

For 1719, the litigation between Chumatlán and Zozocolco (AGN, No. 4) provides a large series of place names, some with Spanish translation. At that time, the people of "San Miguel tonatico Sosocolco" [Zozocolco] claimed the lands of "San Francisco Xalostoque" [Jalostoc] and other lands "included under the names and landmarks" as follows:

Boundary with Huehuetla: Xonalhpauh (*Pagua amarga*) [bitter *pagua*, a fruit similar to the avocado].

Boundary with "San Francisco Caxguacan" [Caxhuacán]: Chaxanchihuiz (*seis Piedras*).

Boundary with Jonotla: manta xacanat (*Mollejon de Camote*), tampochihuix (*piedra Undida*), haca (*Sapote*), Yxagpon (*su Cumbre*), laca tlalhuachihuix (*piedra Amarilla*), Polízihu in Velpomacxpata (*Yladero, o Torsedero*), nacca agalucotno (*lugar de Machetes de Yerba*), Zapapachihuíx (*piedra Blanda*).

Further landmarks along the boundaries of Zozocolco are specified as follows: Catachagni (*lugar aplanado con torta de Cal*), Ixpocotnozcatan (*bebedero de sierbos*), Xihuitxanant (*cabello flor, o flor de cabello*), Naccaxcot natíat (*lugar de tierra agria*), Nactapac. [*sic*] xalanc (*lugar de paredes de San Mateo*) [elsewhere in the same document, reference is made to *"paredes viejas de San Mateo"*], Nactacípihquihuí (*lugar de Palo de Seiba*), Naccocat (*lugar de Aguacates*), Agmoxní (*cumbre de monos*), Catapozgatayanque (*el Rajadero*), Chancatquihuí (*Palo de Caña*), huanguax (*Eco, ó adonde Retumba el Eco*), Naccagatiti (*el Carrisal*).

In two suits dated 1738 (Chumatlán vs. Zozocolco and Zozocolco vs. Jonotla; AGN, Nos. 4 and 5 respectively), we find a few more place names. At least one has been mentioned previously. The first document mentions the top of "a hill, which in the Totonac language is called yxacpun, and in Spanish, *su cumbre.*" The second also mentions yxacpon and gives the same meaning. It adds *"tierras nombradas Catahín"* and *"un parage que nombran en el Ydioma Totonaco* Lixligní . . ." Incidentally, this second document contains considerable text written in Totonac; copies have been given Dr. Norman McQuown, who is making a study of the Sierra Totonac language.

[87] For example, we know that in Sinaloa native names were suppressed because the Spaniards were accompanied by Mexicans, who translated local terms into their own tongue (Sauer, 1934, p. 6), with the end result that, today, most pueblo names are Mexicano-derived.

In 1876, and attended by considerable bloodshed,[88] the Federal Government opened a great stretch of territory to settlement (p. 45), including not only the present Tajín, but extensive areas to the west, south, and north. This expanse of lowland was divided into *lotes*, equivalent to our subdivisions; and these in turn were divided into parcels (*parcelas*). The *lote* which included modern Tajín was known as Ojital y Potrero.[89]

Government-appointed engineers were sent to survey. They cut narrow openings (*brechas*) through the forest, to serve as property lines, and these still are maintained. Not all the subdivisions had parcels of the same size. Ojital y Potrero consisted of 205 parcels, with few exceptions, each of 31 hectares, 7 ares, 95 square meters. This is a generous amount of land, equivalent roughly to 76.8 acres.

Once the survey was completed, parcels were offered for sale at a hundred pesos apiece, plus the cost of registering the title. Most of the purchasers were Totonac.[90] Some already were living in the area, but many were newcomers, chiefly from other Totonac settlements in the Papantla zone. The provenience of the modern population is discussed in some detail a few pages below.

The original survey provided for a plot of ground destined to become the *fundo legal*, or center of the community, where, in time, the new settlement was to have a plaza, a school, and an administrative building. In Ojital y Potrero, two such centers were set aside, each equivalent in area to half a standard parcel.

One of these plots, the core of the now more or less defunct Ojital, lies on the northwest extreme of the subdivision (in parcel 61, maps 6, 8). There is no level land and the *fundo* is situated on a hill. At present, its residents are confined to one family; the school is closed for want of a teacher; and a building labeled "municipal agency" appears to be abandoned. Ojital has been largely replaced by three new centers, formed elsewhere in the northern and western parts of the subdivision.[91]

[88] Modesto González gives the following version: "When I was a boy I lived with my mother on land which is a little beyond the parcel [No. 115] which Pablo González now has. But in these days there were no parcels; they had not yet divided the land. Everyone built his house wherever he liked, and he planted wherever he wanted. For that reason, there were many squabbles.

"In those days, there were no authorities in Ojital y Potrero, but there were in Papantla. In Ojital y Potrero—it still was not called Tajín—there were only two *apoderados*. They watched that the people did not cut the sapote trees and that they took the chicle [to Papantla?]. They charged rent for the fields and the houses; I think they delivered the money to the treasury in Papantla.

"Then engineers arrived and they began to put signs with numbers along the trails; they said they were going to divide the land. Some people were not agreeable. Here, yes—but those of Polutla, of Poza Larga, and of other places, did not want the land divided. So they 'pronounced' (*se pronunciaron*).

"There were many who rebelled. The chief of all was a *ranchero* named Silva. He and his men fought with Federal troops. On one occasion they even entered Papantla, when the troops were elsewhere.

"The people in Tajín were afraid. The Federal troops took the men to fight against the rebels. Only the old men, and the women, and the children were left. Nobody wanted to sleep in his house; at night, the people gathered and went to the *monte* to sleep.

"The political chief (*jefe politico*) in Papantla gave the rebels to understand that he wanted to arrange difficulties. They talked, and it appeared that they were to settle a truce. So the rebels made a fiesta to celebrate the end of hostilities, and they invited the political chief. He attended, but with soldiers. Then the political chief arranged another celebration in Papantla, and he invited the rebels. Silva went—he was the very chief of the *rancheros*. But they detained him and killed him.

"With this, the rebels lost much strength. They had to retire to the *monte*, where they assaulted people and hid from the troops. Then their ammunition gave out and they were being killed. Whenever the soldiers found a rebel they killed him. To escape, they disguised themselves as women and they mixed with the women. But the soldiers touched the bodies of all [the Totonac] until they detected a man; then they killed him.

"At last, the rebels said they would deliver themselves voluntarily, if they were not killed. So it was. They were sent to serve the Government 5 years in a battalion, far from here. Those who did not deliver themselves were killed, one after another.

"So they divided the land in parcels. Not only in Ojital y Potrero, but also in lands which now belong to Tlahuanapa. Then came the authorities: a *sub-regidor*, a *teniente de justicia*, and a *ministro de conservación*, with four assistants. The first had the functions of the *agente* of today; the second, of the *juez auxiliar*. And the *ministro* and his helpers were like a corps of police."

[89] *Potrero* means field or pasture. Our guess would be that the name was applied because of a small stretch of level land south of the archeological site. However, Modesto González thinks the name was given because of a nearby plot of grassland, known as the *sabana*.

[90] Problems did not terminate, once the Totonac had legal title to the land, for there seems to have been a large-scale embezzlement shortly thereafter. Uncertain what to do with their newly acquired titles, many delivered them for safekeeping to a certain Simón Tiburcio, an army officer "of great confidence." He promptly sold the titles to one Pedro Tremari, of Papantla; and he, in turn, sold them to "the oil company" (Aguila?). Many of the Totonac thus lost their lands. As punishment, Tiburcio is said to have been "sent to the battalion"; he remained 5 years in the army, then returned "more important then ever. He now was a colonel. He had good luck until his death."

Apparently this same embezzlement extended far west, to the lands of Palma Sola. Documents concerning the land problems of this latter Totonac community are said to be filed in the archives of the Suprema Corte de Justicia, in Mexico City. We have not had opportunity to consult them, but it is possible that these records contain information concerning the lands of Ojital y Potrero.

[91] These are San Antonio, immediately north of Tajín, established about 1933; and La Lagunilla and Ranchería, farther west. The latter were in the process of being formed during our stay in Tajín, in 1947 and 1948.

MAP 7.—The *fundo legal* of Tajín.

(For legend, see pp. 56–57.)

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In the course of the years—we do not know just when—Potrero came to be known as Tajín. Unlike Ojital, Tajín still is a single community and has not been split into small local centers. Despite the shift in name, the location of the *fundo legal* is unchanged. It lies toward the eastern limits of the subdivision (between parcels 119 and 124, maps 6, 8) and will be described a few pages below.

## BOUNDARIES

The external boundaries of Ojital y Potrero are definitive and well known. The subdivision occupies the northwestern limits of the municipal unit administered from Papantla. Immediately to the east, is Papantla itself, largely mestizo, but with a heavy Totonac ingredient. On all sides, save the north and northwest, are other Totonac communities which fall within the jurisdiction of Papantla—El Chote, Morgadal, Tlahuanapa, Gildardo Muñoz, and Plan de Hidalgo. To the north and northwest are further Totonac communities, but these are administered from the municipal seat of Coatzintla.

In contrast, the internal dividing line between Ojital and Tajín (old Potrero) is ragged and subject to constant flux, although informants generally are able to say, without hesitation, whether a certain parcel of land belongs to Tajín or to one of the Ojital centers. Affiliation seems to depend only in part on the location of the land, and in the majority of cases, the real determining factor appears to be in which community the owner of the parcel gives his 1 day a week of free public labor. For example, parcel No. 148 is occupied and planted exclusively by families who give service in Ojital. Nevertheless, the owner, who lives in another parcel, belongs to Tajín, as does the land which is registered in his name.

Occasionally the situation is obscure, and we have followed the verdict of informants, although we were unable to determine the precise reason for the affiliation of the land in question. For example, parcel No. 123, adjoining the *fundo*, is owned by a resident of Tlahuanapa. He does not participate in communal labor in Tajín, yet the land is considered the domain of the latter community. Furthermore, the owners of parcels No. 80 and No. 86 give service in Ojital (San Antonio), yet three informants state flatly that, regardless, the lands belong to Tajín. Conversely, the owner of parcel No. 82 gives communal labor in Tajín, yet the land is said to belong to Ojital.

In some of these cases, it may be that affiliation follows that of a previous owner. A number of Tajín parcels have been acquired by outsiders, who are not Totonac, not local residents, and who give no communal labor. Under such circumstances, informants attribute the parcel to the community where the previous owner rendered public service. Occasionally a parcel has been divided, and the owner of one half gives communal labor in Tajín the owner of the other half, in Ojital. In that event, only half the parcel is claimed by Tajín (maps 6, 8, Nos. 55, 58).

Men who live near the *fundo legal* of Tajín naturally find it more convenient to give public labor there. But if the dwelling is close to Ojital, the owner may change his affiliation according to whim. He merely informs the municipal offices that, until further notice, he will devote his services to a specified one of the Ojital centers—and without further ado, his name is changed officially from one roll to the other. Seldom is there any discussion; "the municipal agents are not exacting."

There are two principal reasons for changing from one community to another. Perhaps a man becomes annoyed with the municipal authorities and so decides to give his day of free labor elsewhere.

Or the local program of public works may be ambitious and threaten considerable demand on time and even on purse. In this case, it is expedient to shift allegiance. For example, several men in Tajín were not in sympathy with the new school project. To avoid responsibilty, they withdrew their services from Tajín and transferred to one of the Ojital centers. However, after a few years, as the building neared completion, most returned to Tajín, so that their children might have the right to attend the new school.

From time to time, special cases arise. There is that of a literate man who transferred from Tajín to La Lagunilla, when that newly formed Ojital nucleus was badly in need of a secretary and requested his services.

Although the Totonac are free to change the scene of their communal labor and do so from time to time, they may change only within the limits of the main subdivision—that is, within the confines of Ojital y Potrero. For example, a resident of Tajín is not accepted for communal labor in Tlahuanapa or Gildardo Muñoz, since these settlements lie outside the bounds of Ojital y Potrero.

The current limits of Tajín, unstable and ragged though they be, are shown in maps 6 and 8. The

boundary has been determined through systematic checking, parcel by parcel, with several informants, and the official list of those who render public service in Tajín has also been consulted. The resulting boundary represents public opinion rather than official demarcation; but there is no necessity for more formal or more rigid limits. Public labor—on which land affiliation within the Ojital y Potrero subdivision seems chiefly to rest—is an essentially local matter and interests the Papantla authorities only when the repair of the main trails to Papantla is involved.

## THE FUNDO LEGAL

The *fundo legal* of Tajín occupies a relatively level stretch of land, traversed by a meandering arroyo (map 7). Land immediately west of the stream is a couple of meters lower than is that to

*Legend to map 7*

The *fundo legal* of Tajín. Explanatory data are given below, in tabular form. Unfortunately, with respect to the number of roof sheds, the entries are ambiguous. In the text (p. 178), the ordinary dwelling of native type is described as having two long and two short sheds; but below, the same building is entered as of two sheds. Accordingly, the legend makes no distinction between structures, such as granaries and hog shelters, often actually of two sheds, and dwellings, which almost invariably have two long and two short sheds.

Moreover, in the entries below, a house of three sheds may be one of two things: a thatched roof dwelling (actually of two long and two short sheds), with a lean-to addition; or a tiled roof house, of two sheds, likewise with lean-to. The new masonry school is described as of four sheds; other such entries refer exclusively to hipped roof buildings, with tile covering.

The ambiguity outlined above was noticed after our return from the field; without being able to inspect each structure anew, we are reluctant to attempt a detailed correction, building by building.

| Key No., map 7 | Owner | Walls | | | | Roof | | | | | Floor | | Doors | | | Use; other observations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Poles or bamboo | | | | | | | | | | | | | | |
| | | Plain | Mud-plastered | Plank | Masonry | Number of sheds | Tile | Palm | Grass | Other material | Earth | Clay or cement tile | Bamboo | Plank, metal hinges | Other forms | |
| A | Public building | | X | | | 2 | X | | | | | X | | X | | Storage, granary, jail. |
| B | do | | | | X | 4 | X | | | | | X | | X | | School. |
| C | do | | | X | | 1 | | | | X | X | | | | X | School outhouse. |
| D | do | | X | | | 2 | X | | | | X | | | X | | Teacher's dwelling. |
| 1 a | Vicente de León | X | | | | 2 | | X | | | X | | X | | | Bedroom, granary. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Do. |
| c | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room. |
| d | do | | X | | | 2 | X | | | | | X | | X | | Do. |
| e | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| f | do | X | | | | 2 | | X | | | X | | X | | | Do. |
| 2 a | Juan Aldana | X | | | | 2 | X | | | | X | | | X | | Do. |
| b | do | | X | | | 4 | X | | | | | X | | X | | Part rented as municipal office; living room, granary. |
| c | do | | | | X | 1 | | | | X | X | | | | | Sweathouse. |
| | Juan Castro | X | | | | 2 | X | | | | X | | | X | | Store, dwelling; occupied by Nemesio Martínez. |
| 4 a | Vicente de León | | X | | | 3 | X | | | | X | | | X | | Store. |
| b | do | | X | | | 2 | X | | | | X | | | X | | Dwelling, oven. |
| c | do | X | | | | 2 | | X | X | | X | | | X | | Bedroom, granary. |
| 5 | Luis Patiño | X | [1] X | | | 2 | X | | | | X | | | X | | Dwelling; occupied by Papantla carpenter. |
| 6 a | Carmen Pérez Reyes | X | | | | 2 | X | | | | X | | X | | | Abandoned. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| c | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room, granary. |
| d | do | X | | | | 2 | | X | | | X | | | | X | Hog shelter. |
| e | do | X | | | | | | | | | X | | | | X | Fowl pen. |
| 7 | Santiago Simbrón | | | | | | | | | | | | | | | Lot planted to maize by Manuel de la Luz. |
| 8 a | do | X | | | | 2 | | X | | | X | | X | | | Dwelling, granary; occupied by Manuel de la Luz. |
| b | do | | | | | 2 | | X | | | X | | | | | Not in use. |
| 9 a | Silvestra Elías | X | | | | 2 | | X | | | X | | | X | | Storage, granary; occupied by Francisco Morales. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Dwelling; occupied by Julián García. |
| 10 a | Donato Santes | X | | | | 2 | | X | X | | X | | X | | | Bedroom, living room, kitchen; occupied by Francisco Morales. |
| b | do | | | | X | 2 | X | | | | X | | | | | Unfinished; in ruins. |
| c | do | | | | X | 2 | | | | X | X | | | | | Sweathouse; used by Francisco Morales. |
| 11 a | Juan Bautista | X | | X | | 2 | X | | | | X | | | X | | Bedroom, kitchen, granary. |
| b | do | | | X | | 4 | X | | | | | X | | X | | Living room. |
| c | do | | | | | 2 | | X | | | X | | | | | Storage shelter; no walls. |
| 12 | do | | | | | 2 | X | | | | X | | | | | Unfinished house. |
| 13 | Pastora Méndez | | | | | | | | | | | | | | | Lot grown to *monte*. |
| 14 a | Bernabé Xochigua | X | | | | 2 | X | | | | X | | | X | | Dwelling, granary. |
| b | do | X | | | | | | | | | X | | | | | Fowl pens, on adjacent lot. |

[1] Interior, mud-plastered; exterior, plaster confined to one corner of building.

*Legend to map 7*—Continued

| Key No., map 7 | Owner | Walls | | | | Roof | | | | | Floor | | Doors | | | Use; other observations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Poles or bamboo | | | | Number of sheds | Tile | Palm | Grass | Other material | Earth | Clay or cement tile | Bamboo | Plank, metal hinges | Other forms | |
| | | Plain | Mud-plastered | Plank | Masonry | | | | | | | | | | | |
| 15 | José Vicente González | | | | | | | | | | | | | | | Lot grown to *monte*. |
| 16 a | Agustín Santiago | X | | | | 2 | | X | | | X | | X | | | Bedroom, granary. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room. |
| c | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| 17 | Esteban Bautista | | | | | | | | | | | | | | | Lot grown to *monte*. |
| 18 | Jacinto García | | | | | | | | | | | | | | | Do. |
| 19 a | Juan Castro | | X | | | 2 | X | | | | X | | | X | | Storage, oven. |
| b | do | | X | | | 2 | X | | | | X | | | X | | Store, dwelling. |
| c | do | | | X | | 1 | | | | X | X | | | | X | Outhouse. |
| 20 a | Antonio Bautista | X | | | | 2 | X | | | | X | | | X | | Bedroom, living room, granary. |
| b | do | X | | | | 2 | X | | | | X | | | X | | Kitchen. |
| c | do | X | | | | | | | | | X | | | | | Fowl pen. |
| 21 a | Josefina García | | X | | | 2 | X | | | | X | X | | X | | Store, bedroom. |
| b | do | | X | | | 2 | X | | | | X | | | X | | Storage. |
| c | do | | X | | | 2 | X | | | | X | | | X | | Bedroom, kitchen. |
| d | do | | | | | 2 | | X | | | | | | | | Corral. |
| e | do | X | | | | 1 | | | | X | X | | | | X | Outhouse. |
| 22 | Vacant | | | | | | | | | | | | | | | Lot grown to *monte*. |
| 23 | do | | | | | | | | | | | | | | | Lot grown to *monte*; reserved for future chapel. |
| 24 a | Benigno García | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room, granary; occupied by Feliciana de León. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen; occupied by Feliciana de León. |
| 25 | Mauro Pérez | | | | | | | | | | | | | | | Lot grown to *monte*. |
| 26 | Silvestre Patiño | X | [2]X | | | 2 | | X | X | | X | | X | | | Unoccupied. |
| 27 | do | | | | | | | | | | | | | | | Lot grown to *monte*. |
| 28 | Lorenzo Xochigua | X | | | | 3 | | X | | X | X | | X | | | Dwelling, formerly hog shelter; occupied by Modesto González. |
| 29 a | do | X | | | | 4 | X | | | | X | | | X | | Bedroom, living room. |
| b | do | X | [3]X | | | 3 | X | | | | X | | X | | | Bedroom, kitchen. |
| c | do | X | | | | | | | | | X | | | | | Fowl pen. |
| 30 | Pedro de León | X | | | | 2 | X | | | | X | | | X | | Dwelling, granary. |
| 31 a | José Martínez | | | X | | 2 | X | | | | X | | | X | | Bedroom, living room, granary. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| 32 | Pablo Pérez | X | | | | 2 | | X | | | X | | X | | | Dwelling, granary. |
| 33 a | Pedro Pérez | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Do. |
| c | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room, granary. |
| 34 a | Ceferino Pérez | X | | | | 2 | X | | | | X | | | X | | Bedroom, living room. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| c | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room. |
| d | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room, granary; occupied by Alejandro García. |
| e | do | | | | X | 1 | | | | X | X | | | | | Sweathouse. |
| f | do | X | | | | 2 | | X | | | X | | | | | Granary. |
| g | do | X | | | | 2 | | X | | | X | | | | | Hog shelter. |
| 35 a | Mauro Pérez | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room, granary. |
| c | do | X | | | | 2 | | X | | | X | | X | | | Dwelling; occupied by Dorotea de la Cruz. |
| 36 a | Dorotea de la Cruz | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen; occupied by Alberto Martínez. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room, granary; occupied by Alberto Martínez. |
| 37 | Raymundo Pérez | | | | | 2 | | X | | | | | | | | Roofed shelter without walls; not in use. |
| 38 | Pablo González | | | | | | | | | | | | | | | Lot grown to *monte*. |
| 39 | Francisco Xochigua, Jr | | | | | | | | | | | | | | | Do. |
| 40 | Widow of Maximino Simbrón | | | | | | | | | | | | | | | Do. |
| 41 | Francisco Xochigua | X | | | | 4 | X | | | | X | | X | X | | Granary; rented to agricultural cooperative. |
| 42 | Paulino Xochigua | X | | | | 3 | | | | | X | | X | X | | Dwelling, granary. |
| 43 | Alejandro García | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| 44 a | Adolfo Pérez | X | [4]X | | | 2 | | X | | | X | | X | | | Bedroom, living room, granary. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| 45 | Donato Santes | | | | | | | | | | | | | | | Lot grown to *monte*. |
| 46 | Vacant | | | | | | | | | | | | | | | Do. |
| 47 | Lucas García | X | | | | 2 | | X | | | X | | X | | | Abandoned. |
| 48 a | Flumencio Elías | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room, granary. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| 49 a | Vicente García | X | | | | 2 | X | | | | X | | | X | | Bedroom, living room, granary. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |
| 50 a | Esteban González | X | | | | 2 | | X | | | X | | X | | | Do. |
| b | do | | X | | | 2 | X | | | | X | | | X | | Bedroom, living room, granary. |
| 51 a | Lauro Ramírez | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen, granary. |
| b | do | | X | | | 3 | X | | | | X | | | X | | Bedroom, living room. |
| 52 a | Jacinto García | | X | [5]X | | 2 | X | | | | X | X | | X | | Store, storage. |
| b | do | | X | [6]X | | 1 | X | | | | X | | | X | | Bedroom, kitchen. |
| c | do | X | | | | 1 | | | | X | X | | X | | | Corral. |
| d | do | | | X | | 1 | | | | X | X | | | X | | Outhouse. |
| e | do | X | | | | 1 | | | | X | X | | X | | | Hog shelter. |
| 53 a | Rosa Bautista | X | | | | 2 | | X | | | X | | X | | | Bedroom, living room. |
| b | do | X | | | | 2 | | X | | | X | | X | | | Bedroom, kitchen. |

[2] North wall mud-plastered on interior; other walls not plastered.
[3] Plaster confined to interior, at northeast and northwest corners of building.
[4] Incompletely plastered.
[5] Walls in part plank construction; in part, poles-bamboo, mud-plastered.

the east and is of limited utility, since it is subject to flooding. However, it is kept cleared and occasionally serves as a baseball field; or school children march there in honor of some official holiday. Downstream, along the arroyo and including the island enclosed by an ox bow (map 7) is a strip of land which likewise is not generally exploited, since the stream occasionally makes minor changes in course.

The plaza lies toward the northern limits of the *fundo*, surrounded by the equivalent of city lots (*solares*), each approximately 25 × 50 m. Although the *fundo* was set aside in the course of the 1876 survey, lots were not laid out until many years later. One informant thinks that lots were measured and thoroughfares cleared as early as 1910 or 1911; others date this undertaking as about 1926. In any case, actual settlement of the *solares* was not general until 1928.

Lots were sold at $25.00 apiece and titles registered in Papantla. Most of the lots now are privately owned. Reputedly by Federal order, in 1945 or 1946, the granting of new titles to public lands was discontinued, and at present, several families live on *solares* which still, officially, are public domain. The occupants have registered in Papantla and, strangely enough, pay taxes on this land, to which they do not have title, with the understanding that when the Federal ruling is altered, they will have first chance at purchase. On map 7, they appear as owners of the land.

At the specific request of local authorities, our map of the *fundo legal* is somewhat idealized. Individual lots, or *solares*, are fairly well defined by a series of substantial posts of resistant wood. But the streets are far less obvious than the sketch indicates. The so-called Avenida 16 de septiembre (pls. 3, *a;* 9, *f*) is kept cleared at all times, through communal labor. It connects with the main trail to Papantla and continues west, across the *fundo*, to other Totonac communities, such as Plan de Hidalgo and Plan de Palmar. Accordingly, it is a main artery. The Calle Nacional likewise is a main thoroughfare (pl. 3, *c*), at least north of the plaza. It adjoins another branch of the main Papantla trail and runs north to the archeological site. Other streets are far less conspicuous and are little more than narrow, overgrown trails. The Calle General Zaragoza, for example, was scarcely discernible, although its limits were marked by on occasional post. Through communal labor, this "street" was reopened for our benefit, so that it might appear on the map.

The plaza is simply an open plot of ground toward the northern limits of the *fundo*. Weeds are kept cut through communal labor (pl. 3, *b–d*), but there is no pretense at a garden and not even a makeshift equivalent of the kiosk which so often dominates the plaza of towns in Mexico. Except for the plaza proper and for the unoccupied expanse of land to the west and southwest of it, the *fundo* is relatively well wooded. Naturally, every inhabited lot contains a house clearing, but in most a good many trees remain standing, and a certain amount of low *monte* gives privacy.

On the west, the boundary of the plaza is irregular, owing to the intrusion of a *solar* and the school building (pl. 3, *e;* map 7, *B*). The latter, constructed through communal enterprise, is of masonry (ftn. 8, p. 176) and is the pride and joy of Tajín. Toward the southern limits of the plaza, a small, windowless, mud-plastered building (pl. 3, *a, d;* map 7, *A*) sits in isolated dignity. It formerly functioned as the municipal office, but now is relegated to use as a jail and for storage, and the local government holds forth in rented quarters (map 7, lot No. 2, house *b*). Between the old municipal building and the school is a low mound of stones, all that remains of a former chapel.[92]

The *fundo legal* is the closest approximation to an urban center in Tajín. Here settlement is relatively concentrated; here are the school and the municipal office; and here the men present themselves one day a week throughout much of the year, to give free communal labor. Here too are clustered all but two of the little stores which supply the Totonac with "city" merchandise, when they do not go to Papantla for their purchases; and one of the remaining stores is situated on the Calle Nacional, only a few hundred meters north of the limits of the *fundo*. Architecturally, the *fundo* is pretentious, by local standards, and has a higher percentage of mud-plastered buildings, of plank walls, and of tiled roofs than is found in outlying parcels.

[92] As recent arrivals in Tajín, we asked if there were a church. The answer was regretful; formerly there had been one, but it had fallen in an earthquake, and "we have not had time to rebuild as yet." Upon further inquiry, it turned out that the disaster had transpired "about 30 years ago."

COATZINTLA.
PAPANTLA.
ARROYO DE TLAHUANADA
TLAHUANADA
GILDARDO MUÑOZ
Ejital y Potrero boundary.
Principal trails.
Parcel sectioned.
Dwelling, occupied by owner of land or a relative.
Dwelling, on rented ground.
Dwelling, occupant of which gives public labor in one of Ejital centers.
Field planted by owner of land or a relative.
Field planted on rented land.
Field planted by one who gives public labor in one of Ejital centers.
Field planted by non-resident of Tajín.

MAP 8.—Distribution of dwellings and fields.

(For legend, see p. 59.)

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## DISTRIBUTION OF HOUSES AND FIELDS

Less than one-fifth of the total population of Tajín resides in the *fundo legal* which, at the time of our count, had 206 individuals divided among 35 families. The rest live widely scattered on outlying parcels of land, the more remote as much as 3 hours on foot from the *fundo*. These dispersed houses are built in secluded clearings, generally some distance from the main trails and well hidden from them.

A graphic representation of the distribution of dwelling and of fields is given in map 8.[93] It shows the ragged and somewhat shifting boundary between the lands of Tajín and Ojital. It also demonstrates that certain Tajín Totonac plant on lands outside the community—not only within Ojital property, but completely outside the Ojital y Potrero subdivision. Furthermore, it indicates that a few nonresidents plant on Tajín lands. Owing to these complications, the discussion below will be somewhat involved.

The map accounts for a total of 167 households (exclusive of two in Papantla and one in Tlahuanapa, which plant on Tajín lands). For want of space, the houses of the 35 families of the *fundo legal* (map 7) are not entered, but the arrows which radiate from the latter represent families who live in the urban center and who plant on outlying parcels or on lands outside of Tajín. The 35 families of the *fundo* must be added to the 167 households shown on map 8, giving a total of 202. However, of these 202 households, 16 live on Tajín lands but give communal labor in one of the Ojital centers; the Totonac consider, therefore, that they belong to Ojital, not to Tajín. Because of this, these 16 families are not covered by our general census, which includes 186 families.

Map 8 shows a total of 114 parcels of land which either belong to Tajín or which are exploited in part or fully by the Tajín Totonac. This total includes 2 half parcels (map 8, Nos. 55, 58) claimed by Tajín; the remaining halves belong to Ojital, as do six entire parcels, which are planted by Tajín residents. Naturally, some of these are further exploited by residents of Ojital, but this is not indicated on our map. The total of 114 does not include the half dozen plantings which fall outside the bounds of the Ojital y Potrero subdivision. According to use, these 114 parcels may be grouped as follows:

| | |
|---|---|
| Vacant[94] | 13 |
| Parcels with houses, no plantings | 2 |
| Parcels with plantings, no houses | 31 |
| Parcels with both houses and plantings | 68 |
| Total | 114 |

[93] Petróleos Mexicanos generously made available a detailed map, inherited from its predecessors, which shows the individual parcels of the Ojital y Potrero subdivision. Thanks to it, the distribution of population and plantings can be shown clearly.

The original map identifies parcels only by number. In part through a study of state tax records—not only incomplete, but often incorrect as to parcel number—and in part through interrogation of informants, each parcel within Tajín has been identified by owner.

[94] We determined why these 13 parcels were not exploited:

Nos. 90, 174. Owned by a non-Totonac Papantla resident, who apparently is holding them to resell at a profit; he refuses to rent No. 174, because it contains *monte alto*.

Nos. 134, 155. Each owner has another parcel closer to the *fundo*, which is handier to plant.

Nos. 167, 204. These have been cleared almost completely within recent years. The first was rented on large scale, and the *monte* must have time to reestablish itself before the land can be further planted. The second was purchased by "a foreigner," who cleared it completely, preparatory to large-scale cane planting. His death interrupted the project, and the land now is in the name of a non-Totonac Papantla resident, who desires to sell. No one is interested in purchasing, because the *monte* will have to grow for several years before it warrants clearing and planting anew.

No. 173. Parcel abandoned by the owner following the murder of his son.

Nos. 178, 179. Cherished because they are largely *monte alto*. The owner has two other parcels adjacent to the *fundo*, sufficient for his immediate needs and those of his sons.

No. 186. Owner likewise owns No. 185 and does not require the adjacent parcel at present.

Nos. 188, 191. Owners have moved to Papantla; their lands not utilized at present.

No. 192. Parcel in process of being sold.

*Legend to map 8*

Distribution of dwellings and fields. Stippled parcels belong to the Ojital centers; the remaining parcels are Tajín lands.

The key to land ownership appears on the map. A square indicates the plantings of a household within a given parcel; *individual* fields are not shown, and several may be represented by a single square. Similarly, a circle represents a household, although the latter may consist of one or of several buildings. No attempt has been made to show the relative position of dwellings and fields within each parcel. If a family lives in one parcel and likewise plants there, the circle is contained within a square (for example, No. 113, whose plantings are exclusively within the parcel where the dwelling is situated). If a family plants outside the parcel, an arrow leads from the domicile to the field or fields. Thus parcel 89 contains six households; one family plants exclusively within this same parcel; three plant both there and elsewhere; and two plant only on other lands.

For want of space, households within the *fundo legal* (see map 7) are not shown, but arrows radiating from it represent families who live in the urban center and plant on outlying lands.

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More than half the parcels contain both houses and fields. Less than a third are planted but not inhabited—accounted for, in part, by families who live in the *fundo* but who plant on outlying parcels. Only two parcels have dwellings but no fields.[95]

In Tajín 167 families live on parcels. Of them, 16 give public labor on Ojital centers; although they have not been included in our census, they should be taken into consideration here, for they live on Tajín lands. Of the total of 114 parcels, 6 are considered part of Ojital, as are halves of 2 others (map 8, Nos. 55, 58). If we deduct these 7 Ojital parcels, we have a total of 107 for Tajín. At this point, our families are reduced to 166, for one Tajín family lives on an Ojital parcel which is eliminated from the count. In short, we have a total of 166 families spread over 107 parcels. Density of dwellings within parcels may be summarized as follows:

| Parcels occupied by: | *Number of parcels* | *Number of families* |
|---|---|---|
| 1 family only | 27 | 27 |
| Do | [1].5 | 1 |
| Do | [1].5 | 1 |
| 2 families | 16 | 32 |
| 3 families | 10 | 30 |
| 4 families | 5 | 20 |
| 5 families | 3 | 15 |
| 6 families | 4 | 24 |
| 8 families | 2 | 16 |
| Vacant parcels | 13 | |
| Parcels with fields, no dwellings | [2]26 | |
| Total | 107 | 166 |

[1] Two half parcels, Nos. 55 and 58, of map 8, each occupied by a lone family.

[2] Exclusive of 5 Ojital parcels, with fields but no dwellings.

In other words, 27 of the 107 parcels are occupied by a lone family, and 8 families is the maximum density per parcel. Only two (map 8, Nos. 73, 97) are so heavily peopled, and in neither case is the land sufficient. In one instance, half the families, and in the other, all 8, have fields elsewhere.

Table 4 is based on map 8, together with some supplementary data for the families who live in the *fundo*. In order to have the table intelligible, we must first explain our definition of parcel ownership. In most cases, a parcel is legally in the name of a single individual, often the one who acquired the land in the 1876 subdivision, although, quite naturally, few of the original purchasers still survive. Upon the death of one, the heirs, usually the sons, have continued paying taxes in the name of the deceased, because the official charges for changing the land records are disproportionately high. Under the circumstances, the legal owner may be long since defunct, and the actual owners are his sons or perhaps even his grandsons. Patrilineal inheritance of land is marked and, incidentally, accords well with Totonac preference for patrilocal residence.

[95] In one case (No. 97) the family is numerous and the parcel contains eight dwellings; the occupants plant exclusively on their own and on rented lands in adjacent parcels. In the other case (No. 196) the owners have another parcel fragment nearby, which is where they have elected to plant.

TABLE 4.—*Land ownership and utilization*

| Parcel ownership or rental | Families resident in | | Plantings in | |
|---|---|---|---|---|
| | Tajín | Elsewhere | Tajín | Elsewhere |
| Parcel owners: | | | | |
| *a.* Live on own parcel; plant exclusively within it | 73 | 0 | 73 | 0 |
| *b.* Live on own parcel; do not plant | 2 | 0 | 0 | 0 |
| *c.* Live on own parcel; plant it and another, likewise own property | 18 | 0 | 34 | [1] 2 |
| *d.* Live on own parcel; do not plant it, but another or others, likewise own property | 18 | 0 | 19 | [1] 2 |
| *e.* Live on own parcel; plant it and another, latter rented | 13 | 0 | 22 | [2] 4 |
| *f.* Live on own parcel; do not plant it, but 2 others, one rented, one own property | 1 | 0 | 2 | 0 |
| *g.* Live on own parcel; plant exclusively on rented parcel or parcels | 11 | 0 | 11 | [1] 1 |
| *h.* Live on rented parcel; plant own parcel | 4 | 0 | 4 | 0 |
| *i.* Live in *fundo;* plant own parcel | 8 | 0 | 7 | [3] 1 |
| *j.* Live in *fundo;* plant own parcel and an additional rented one | 1 | 0 | 2 | 0 |
| *k.* Live in Tlahuanapa; plant own parcels in Tajín | 0 | 1 | 2 | 0 |
| Subtotal | 149 | 1 | 173 | 10 |
| Parcel renters: | | | | |
| *l.* Live on rented parcel; plant exclusively within it | 18 | 0 | 17 | [1] 1 |
| *m.* Live on rented parcel; plant it, as well as another rented parcel | 2 | 0 | 4 | 0 |
| *n.* Live on rented parcel; do not plant it, but another rented parcel or parcels | 5 | 0 | 5 | [1] 1 |
| *o.* Live on rented parcel; do not plant it or elsewhere | 1 | 0 | 0 | 0 |
| *p.* Live in *fundo;* plant rented parcel or parcels | 19 | 0 | 18 | [3] 3 |
| *q.* Live on rented parcel; plant in Coatzintla | 1 | 0 | 0 | [4] 1 |
| *r.* Live in Papantla; plant rented parcel, Tajín | 0 | 2 | 2 | 0 |
| Subtotal | 46 | 2 | 46 | 6 |
| Neither own nor rent parcels: | | | | |
| *s.* Live in *fundo;* do not own or rent parcels; do not plant | 7 | 0 | 0 | 0 |
| Total | 202 | 3 | 222 | 16 |
| Less families who live in Tajín, but give labor in Ojital centers | 16 | | | |
| | 186 | | | |

[1] Ojital.

[2] 2, Ojital; 2, Tlahuanapa.

[3] Tlahuanapa.

[4] Coatzintla.

Most parcels are exploited by several households related in the male line:[96] by several brothers, by their respective sons, and perhaps by a widow of one of the brothers or sons. These relatives, who might be said to have a moral claim on the lands, have been considered by us as "owners," although the property is not legally in their names. In questionable cases, the criterion has been whether or not they pay rent. If a family is related to the official owner and uses the land free of charge, it appears on map 8 and in table 4 as an owner. If there is no relationship or if it is remote and rent is charged, the family appears among the renters.

For this reason, the total number of owners exceeds the total number of parcels. According to our count, 136 families live on parcels of which they may be considered owners or part owners; only 31 live on lands to which they have no claim, except as renters. These figures include the Totonac families who give communal labor in Ojital centers, some of whom own lands in Tajín. They do not include the 35 families of the *fundo*, because whether or not they own parcels, they do not live on them.

To a certain extent, the Tajín Totonac spill over onto the lands of adjacent communities. One family (map 8, parcel No. 148) plants on lands administered from Coatzintla; another (parcel No. 200) plants in Gildardo Muñoz; several, who live in the *fundo*, use Tlahuanapa lands; and, along the northern and northeastern limits of Tajín, a number of plantings are made on land which belong to various Ojital centers. To a lesser degree, there are intrusions in Tajín. Two individuals of Papantla rent Tajín lands (Nos. 79, 87) for their fields; and one resident of Tlahuanapa plants on two Tajín parcels (Nos. 169, 201) which are, incidentally, his own property.

Our count shows a total of 238 plantings, of which 6 lie outside the limits of Ojital y Potrero. Of the 232 with the subdivision, 158 are on lands owned by the planter; 74 are on rented lands. Forty-three families—roughly one-fourth of the Tajín households—plant on more than one parcel.

Most plant on lands relatively close at hand. Fortunately for the residents of the *fundo*, over half of whom do not own outlying lands, there are several parcels in the immediate environs whose owners are willing to rent on large scale (Nos. 88, 120, 123, and 126). However, one *fundo* dweller travels a very considerable distance to his own land (No. 195) to plant. Perhaps because of the distance, the field is not properly tended; in any case, it is notably not productive.

A few parcel owners have their fields far from their dwellings. Two residents of No. 71 travel practically the full north-south stretch of the community, to plant in No. 199. There they have only vanilla plantings, which require a minimum of care, except as harvest approaches. Parcel No. 73 is overcrowded, and some years ago, one of the owners purchased an additional parcel, No. 194, which is far-removed. His milpa is in the newly purchased parcel, and when the corn requires particular attention, he moves temporarily to No. 194. This is, however, an exception, and maize generally is planted closer home.

On the whole, Tajín is provided with ample land (p. 54), for which reason the current agricultural pattern functions successfully. However, in some cases—when a man has left several sons who exploit a given parcel—the pinch is becoming evident, and, in time, with a normal increase of population, land shortage is inevitable. There are several instances of families who have moved to communities to the west, where *monte alto* still is abundant, simply because the Tajín parcels were insufficient for all the heirs.

At present, 23 of the 107 Tajín parcels (table 5, *a*, *b*) are in the hands of "outsiders." Two are held by local residents who, because they give public labor in Ojital, are considered members of that community, not of Tajín. The remaining 21 parcels are owned by nonresidents, hence are available to Tajín only through loan or rental. Petróleos Mexicanos clings to two parcels (Nos. 76, 126), apparently on the chance that it may want to resume drilling for oil. Nine parcels are in the hands of non-Totonac owners, who have bought the land as an investment. The remaining 10 are owned by Totonac, scattered in various nearby communities.

Of Tajín families, or clusters of related families, 16 own more than an entire parcel of land: 1 has 4; 5 have 3; and 10 have 2 (table 5, *c*). In addition, one family has an entire parcel and fractions

[96] Of the 27 parcels and 2 half parcels inhabited by a single household, 14 contain multiple plantings; that is, they are exploited by more than one family, although only one resides within the parcel.

of 2 others; another has 2 parcels and part of another (table 5, *d*). Thirty-four parcels each are held by a single family or group of related families (table 5, *e*). Eight parcels are fractioned. Of these, one family holds two half-parcels, hence has the equivalent of an entire one. Two families, noted above, hold one and two entire parcels respectively, plus parts of others; the latter are counted among the fractions. The balance of the divided parcels is distributed among families whose total holdings are less than a full parcel.

TABLE 5.—*Parcel ownership*

| | *Number of parcels* |
|---|---|
| Owned by "outsiders": | |
| *a.* Entire parcels, owned by local residents, who give communal labor in Ojital, hence are considered non-Tajín | 2 |
| *b.* Entire parcels owned by nonresidents: | |
| Petróleos Mexicanos | 2 |
| Papantla residents, non-Totonac | 8 |
| Tampico (?) resident, non-Totonac | 1 |
| Totonac non-residents, living in Ojital, Tlahuanapa, Papantla, Plan de Palmar, Vista Hermosa | 10 |
| Subtotal | 23 |
| Owned by Tajín Totonac: | |
| *c.* Entire parcels, each family or group of related families having 2 to 4 parcels | 39 |
| *d.* Entire parcels, each owned by a family or group of related families having, in addition, fractions of other parcels (see text); fractions included below, under *f* | 3 |
| *e.* Entire parcels, each owned by a family or group of related families with no other parcel holdings | 34 |
| *f.* Fractioned parcels (see text), including residue from *d* | 8 |
| Subtotal | 84 |
| Total | 107 |

## SETTLEMENT PATTERN

We have seen in the preceding pages that a relatively small proportion of the population of Tajín lives within the *fundo legal* and that most of the families are dispersed, on outlying parcels. Obviously, this particular scheme of settlement cannot be regarded as indigenous, since it was planned by Federal Mexican authorities in relatively recent years; the Totonac merely have occupied the plots of ground laid out by Government survey.

However, it appears that the combination of an urban center with a widely scattered rural population approximates an old Totonac settlement pattern. At the time of the Conquest, the Totonac had a number of sizable towns, of which "Cempoala" and "Quiahuixtlan" are best known. According to Torquemada (1:249), the Totonac and "Meztitecas" had large and important centers, about which the "king" and "principal" people and "nobles" lived—"although not in formed streets,[97] at least in concerted order." The rest of the populace lived scattered "in hills, mountains, valleys, and ravines."

At the time of the Conquest, Papantla evidently was an urban center, and its population has been calculated at 60,000 persons (p. 9). Although we cannot be certain that the ruins of Tajín are to be identified with the Totonac, if so, it is evident that some centuries before the Conquest there was at least one large Totonac center in the Papantla area. However, in the latter part of the sixteenth century, it is said that the Indians of Papantla lived "far from one another, on the slopes of hills" (Relación de Papantla), and this essentially disperse settlement pattern still holds for close to four-fifths of the modern Tajín population.

## MODERN POPULATION

### PROVENIENCE

It is difficult to identify the individuals who purchased lands in 1876, but our census gives a good idea of the provenience of the modern population. The first column of table 6 indicates the birthplace of the heads of families, together with that of their wives.[98] Clearly, most are natives of Tajín itself or of other communities in the general Papantla area. The intrusion from zones of intermediate and high elevation is negligible. If we consider Papantla as Totonac rather than mestizo, then it may be said that, without exception, all heads of families and their wives are from Totonac settlements.

[97] However, elsewhere, Torquemada (1:396) credits "Cempoala" with streets; and Díaz del Castillo (1:170) mentions streets, as well as "the great plaza" and patios.

[98] In some cases, the head of the family is a lone man, or, more frequently, a lone woman. In cases of plural marriage, the birthplace of the several wives is included in the count. The record is almost complete for the entire community, although information is wanting for a few families.

TABLE 6.—*Provenience of Tajín population*[1]

| Provenience | Heads of families and their wives | Parents and grandparents of preceding group |
|---|---|---|
| *Lowlands: Papantla and surrounding zones (Veracruz)* | | |
| Cazones: | | |
| Cazones | 0 | 1 |
| Coatzintla: | | |
| Coatzintla | 1 | 10 |
| Contreras (formerly San Martín) | 3 | 15 |
| Escolín de Coatzintla | 3 | 2 |
| Poza de Cuero | 3 | 7 |
| Poza Rica | 0 | 1 |
| Coxquihui: | | |
| Coxquihui | 1 | 1 |
| Sabaneta | 0 | 2 |
| Coyutla: | | |
| Coyutla | 0 | 1 |
| Espinal: | | |
| Entabladero | 0 | 1 |
| Espinal | 0 | 2 |
| Pacífico | 0 | 1 |
| Papantla: | | |
| Agua Dulce | 0 | 6 |
| Aguacate (near Tecolutla) | 0 | 3 |
| Arroyo Colorado | 1 | 1 |
| Arroyo Grande | 1 | 1 |
| Boca de Lima | 1 | 1 |
| Carrizal | 0 | 1 |
| Cazuelas | 2 | 1 |
| Cedro, El | 0 | 6 |
| Cerro del Carbón | 1 | 1 |
| Cerro Grande | 0 | 1 |
| Chote, El | 0 | 5 |
| Escolín de Papantla | 1 | 0 |
| Gildardo Muñoz | 2 | 0 |
| Mesillas | 3 | 3 |
| Mozutla y Pital | 1 | 4 |
| Ojital | 29 | 60 |
| Papantla | 10 | 22 |
| Plan de Hidalgo (formerly San Miguel el Grande) | 8 | 22 |
| Polutla | 8 | 9 |
| Poza Larga | 0 | 2 |
| San Antonio | 5 | 4 |
| San Lorenzo | 1 | 0 |
| San Pablo | 0 | 1 |
| Santa Agueda | 2 | 2 |
| Tajín | 250 | 225 |
| Talaxca | 5 | 20 |
| Taracuán | 2 | 0 |
| Tlahuanapa | 7 | 25 |
| Papantla or Coatzintla: | | |
| Chote, El (which one not specified) | 0 | 1 |
| Escolín (which one not specified) | 1 | 2 |
| *Intermediate zone, between lowlands and highlands* | | |
| Filomeno Mata (Veracruz): | | |
| Filomeno Mata (formerly Santo Domingo) | 0 | 2 |
| Hueytlalpan (Puebla): | | |
| Zitlala | 0 | 2 |
| Jopala (Puebla): | | |
| Chicontla | 1 | 2 |
| *Highlands, Sierra de Puebla* | | |
| Ahuacatlán (Puebla): | | |
| San Andrés [Tlayehualancingo] | 1 | 2 |
| San Juan Ahuacatlán | 0 | 1 |
| Tetela (Puebla): | | |
| Tetela | 0 | 2 |
| *Miscellaneous* | | |
| Altotonga, Veracruz | 0 | 2 |
| Huauchinango, Puebla | 0 | 1 |
| "Huasteca" | 0 | 1 |
| Molango, Hidalgo | 0 | 1 |
| Puebla, town unknown | 0 | 1 |
| "Sierra," town unknown | 0 | 1 |
| Teziutlán, Puebla | 0 | 1 |
| Tulancingo, Hidalgo | 0 | 1 |

[1] Communities are classified according to present municipal affiliation, and the municipal units are grouped roughly according to elevation. The lowlands and the intermediate zone are Totonac, but non-Totonac elements are represented in the highland area and in the miscellaneous lot.

The second column of the table gives the provenience of the parents and grandparents of the heads of families and of their wives.[99] A much wider geographical range is represented. All the lowland areas and those of intermediate elevation are predominantly Totonac. In the highlands, the municipality of Ahuacatlán is mixed; San Andrés is Totonac, San Juan, Mexicano. Tetela likewise is Mexicano. The miscellaneous grouping is largely non-Totonac. Although Altotonga and Teziutlán have a low percentage of Mexicano, Totonac is not represented there. Today, the native speech of Huauchinango is chiefly Mexicano, but two pueblos of that municipality are predominantly Totonac. Tulancingo has a considerable Otomí and Mexicano element; Molango, a bit of Mexicano, with Otomí negligible.

In summary, it may be said that the present population of Tajín is essentially local, in the sense that it has been culled largely from the lowlands of Papantla and immediately adjacent zones. A minor ingredient is from Totonac areas of the Sierra de Puebla and of intermediate elevation, and there is an insignificant scattering of diverse, non-Totonac elements. On the whole, it would appear that Tajín is essentially Totonac in background, and we believe that its culture may be considered more or less representative of the Papantla zone.

Our impression is that the Totonac population of the Papantla lowlands tends to shift considerably, within a range of small compass; and the composition of Tajín probably is about as stable as is that of other small, local communities. These statements are largely impressionistic, but the original sheets of the 1940 Federal census tend to be corroborative. Ordinarily, the census records birthplace only by State; but in a number of communities of the Papantla area, precise birthplace gratuitously has been noted.

As a case in point, we may consider the provenience of the Totonac-speaking population of Aguacate, on the highway to Tuxpan. Its total population is 777, of which 498 speak Totonac. The provenience of the latter is as follows:

[99] The table does not attempt to show the *number* of relatives which has come from each place. For example, one individual has one or more parents or grandparents from Cazones; 10 have one or more from Coatzintla, etc.

The data are not complete, yet they give a fair idea of the background of the local population. A surprising number of individuals is vague concerning the birthplace of grandparents.

| Provenience: | *Totonac monolinguals* | *Totonac-Spanish bilinguals* |
|---|---|---|
| Cazones: | | |
| Barra de Cazones | 0 | 1 |
| Cazones | 0 | 2 |
| Coyutla: | | |
| Coyutla | 0 | 1 |
| Gutiérrez Zamora: | | |
| Gutiérrez Zamora | 0 | 1 |
| Papantla: | | |
| Aguacate | 169 | 215 |
| Arroyo Colorado | 2 | 0 |
| Caristay | 3 | 1 |
| Carrizal | 14 | 5 |
| Cerro Grande | 1 | 1 |
| Mozutla | 5 | 0 |
| Papantla | 0 | 6 |
| Pital | 0 | 1 |
| Polutla | 2 | 0 |
| Poza Verde | 2 | 1 |
| Puente de Piedra | 4 | 1 |
| Santa Agueda | 16 | 6 |
| Sombrerete | 5 | 12 |
| Taracuán | 1 | 0 |
| Volador | 5 | 0 |
| Municipal unit not identified: | | |
| Arroyo Grande (Papantla or Gutiérrez Zamora) | 0 | 1 |
| Escolín (Papantla or Coatzintla) | 0 | 1 |
| Limón Grande | 2 | 2 |
| "Veracruz," town not indicated | 2 | 0 |
| Not specified | 7 | 0 |
| Total | 240 | 258 |

Here again we have the impression that the local population is in a considerable state of flux, but that the essential elements are all Totonac, from the lowlands about Papantla. And much the same situation holds for other local communities, for example: Arroyo del Arco, Arroyo Grande de Boca de Lima, El Chote, Madero, Plan de Limón, Santa Cruz, and Serafín Olarte. This shifting of the local population undoubtedly has resulted in a general blending of culture, if indeed there were local differences at one time.

### COMPOSITION

According to our count, the Tajín Totonac comprise 186 families,[1] with a total of 1,102 inhabitants. Accordingly, there is an average of nearly 6 persons per household. The composition of family groups will be discussed in Part 2 of this report.

Data at hand permit two independent analyses of the age-sex-speech distribution of population. For the first (table 7; fig. 1), information comes

[1] As explained previously, we have excluded from the census 16 families who live on Tajín lands but who give communal labor in Ojital centers; informants consider that they belong to Ojital, not to Tajín. By the same token, we have included one family which lives on an Ojital parcel, but which gives public labor in Tajín. Undoubtedly this is contrary to normal procedure, but we have tried to follow the Totonac definition of Tajín.

TABLE 7.—*Composition of Tajín population*[1]

| Age group | Males | | | | | Females | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Language disregarded | Totonac monolinguals | Totonac-Spanish bilinguals | Spanish monolinguals | Subtotal | Language disregarded | Totonac monolinguals | Totonac-Spanish bilinguals | Spanish monolinguals | Subtotal | |
| 0–4 | 63 | ----- | ----- | ----- | 63 | 56 | ----- | ----- | ----- | 56 | 119 |
| 5–9 | ----- | 26 | 22 | 6 | 54 | ----- | 45 | 4 | 6 | 55 | 109 |
| 10–14 | ----- | 11 | 39 | 6 | 56 | ----- | 19 | 17 | 5 | 41 | 97 |
| 15–19 | ----- | 5 | 25 | 5 | 35 | ----- | 23 | 16 | 4 | 43 | 78 |
| 20–24 | ----- | 4 | 27 | 2 | 33 | ----- | 24 | 9 | 4 | 37 | 70 |
| 25–29 | ----- | 5 | 19 | 3 | 27 | ----- | 26 | 12 | 3 | 41 | 68 |
| 30–34 | ----- | 4 | 11 | 2 | 17 | ----- | 11 | 7 | 0 | 18 | 35 |
| 35–39 | ----- | 4 | 16 | 3 | 23 | ----- | 10 | 6 | 6 | 22 | 45 |
| 40–44 | ----- | 2 | 8 | 2 | 12 | ----- | 10 | 4 | 2 | 16 | 28 |
| 45–49 | ----- | 2 | 7 | 3 | 12 | ----- | 6 | 1 | 1 | 8 | 20 |
| 50–54 | ----- | 0 | 4 | 0 | 4 | ----- | 2 | 2 | 0 | 4 | 8 |
| 55–59 | ----- | 1 | 2 | 1 | 4 | ----- | 6 | 2 | 1 | 9 | 13 |
| 60–64 | ----- | 2 | 2 | 1 | 5 | ----- | 2 | 0 | 0 | 2 | 7 |
| 65–69 | ----- | 1 | 0 | 0 | 1 | ----- | 2 | 1 | 0 | 3 | 4 |
| 70–74 | ----- | 4 | 2 | 0 | 6 | ----- | 2 | 0 | 0 | 2 | 8 |
| 75–79 | ----- | 3 | 1 | 0 | 4 | ----- | 0 | 1 | 0 | 1 | 5 |
| 80–84 | ----- | 1 | 0 | 0 | 1 | ----- | 1 | 0 | 0 | 1 | 2 |
| 85–89 | ----- | 1 | 1 | 0 | 2 | ----- | 0 | 0 | 0 | 0 | 2 |
| 90+ | ----- | 0 | 0 | 0 | 0 | ----- | 0 | 0 | 0 | 0 | 0 |
| Total | 63 | 76 | 190 | 34 | 359 | 56 | 189 | 82 | 32 | 359 | 718 |

[1] In 1940, by age, sex, and speech. The information comes from the original sheets of the 1940 Federal census, on file in the archives of the Dirección General de Estadística, in Mexico City.

The table gives the numerical data on which figure 1 is based; the relatively large number of Spanish monolinguals is discussed in the legend to that figure.

TABLE 8.—*Composition of Tajín population*[1]

| Age group | Males | | | | Females | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | Language disregarded | Totonac monolinguals | Totonac-Spanish bilinguals | Subtotal | Language disregarded | Totonac monolinguals | Totonac-Spanish bilinguals | Spanish monolinguals | Subtotal | |
| 0–4 | 90 | ----- | ----- | 90 | 97 | ----- | ----- | ----- | 97 | 187 |
| 5–9 | ----- | 68 | 20 | 88 | ----- | 72 | 22 | 0 | 94 | 182 |
| 10–14 | ----- | 30 | 42 | 72 | ----- | 49 | 21 | 0 | 70 | 142 |
| 15–19 | ----- | 18 | 39 | 57 | ----- | 35 | 22 | 1 | 58 | 115 |
| 20–24 | ----- | 13 | 35 | 48 | ----- | 30 | 18 | 1 | 49 | 97 |
| 25–29 | ----- | 4 | 30 | 34 | ----- | 31 | 12 | 1 | 44 | 78 |
| 30–34 | ----- | 6 | 23 | 29 | ----- | 22 | 11 | 1 | 34 | 63 |
| 35–39 | ----- | 3 | 26 | 29 | ----- | 21 | 8 | 0 | 29 | 58 |
| 40–44 | ----- | 1 | 14 | 15 | ----- | 21 | 9 | 0 | 30 | 45 |
| 45–49 | ----- | 3 | 13 | 16 | ----- | 9 | 5 | 0 | 14 | 30 |
| 50–54 | ----- | 2 | 9 | 11 | ----- | 15 | 1 | 0 | 16 | 27 |
| 55–59 | ----- | 4 | 4 | 8 | ----- | 7 | 2 | 0 | 9 | 17 |
| 60–64 | ----- | 2 | 6 | 8 | ----- | 9 | 5 | 0 | 14 | 22 |
| 65–69 | ----- | 0 | 1 | 1 | ----- | 4 | 0 | 0 | 4 | 5 |
| 70–74 | ----- | 0 | 4 | 4 | ----- | 3 | 0 | 0 | 3 | 7 |
| 75–79 | ----- | 1 | 4 | 5 | ----- | 2 | 0 | 0 | 2 | 7 |
| 80–84 | ----- | 2 | 1 | 3 | ----- | 4 | 0 | 0 | 4 | 7 |
| 85–89 | ----- | 0 | 1 | 1 | ----- | 2 | 0 | 0 | 2 | 3 |
| 90 | ----- | 2 | 1 | 3 | ----- | 2 | 0 | 0 | 2 | 5 |
| Total | 90 | 159 | 273 | 522 | 97 | 338 | 136 | 4 | 575 | 1,097 |

[1] In 1947–48, by age, sex, and speech, according to our own census. The table gives the numerical data on which figure 2 is based.

Of the total population of 1,102, only 1,097 individuals are represented in the table and figure; 5 small children were excluded, for want of information concerning age and sex. Two were omitted through oversight; another was not reported by the family. Presumably the offspring of a plural wife, the father attempted concealment. The two remaining children allegedly are the result of an incestuous union, and the family denied their existence.

from the original sheets of the 1940 Federal census, which are in the archives of the Dirección General de Estadística. The second (table 8; fig. 2) is based on our own census, which was started in 1947 and completed in 1948. The 1947 data were corrected to include births, deaths, and marriages which took place through the early children have been excluded (see explanation to table 8), and both table and figure are based on 1,097 individuals. Obviously, an increase of 50 percent between 1940 and 1948 is not natural. Although, by and large, we find the Federal census accurate, undeniably it is incomplete. It was taken by the local school teacher, who apparently over-

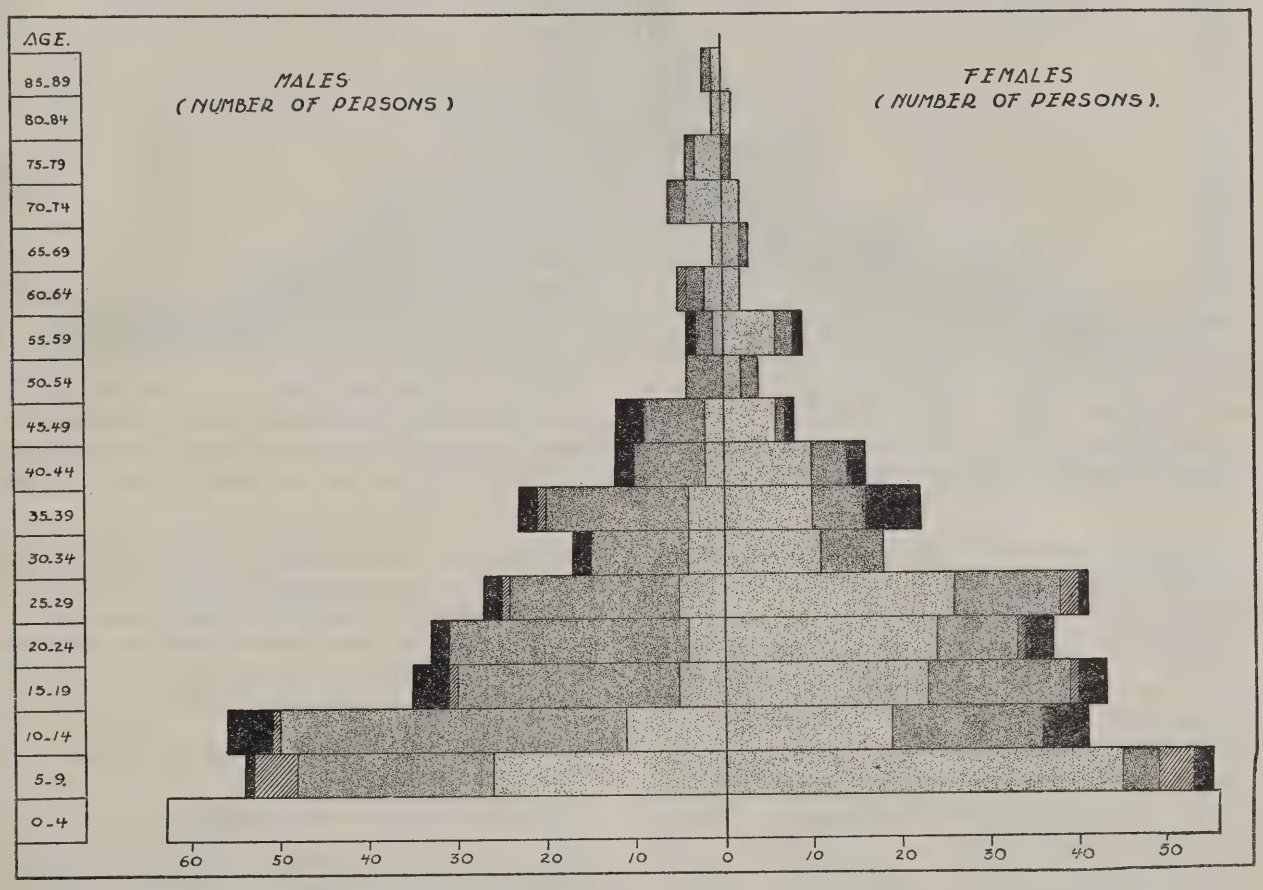


FIGURE 1.—Composition of Tajín population. Age, sex, and speech are indicated, according to data given by the 1940 Federal census (see table 7). For the youngest group (0–4 years), language has been disregarded. For other age groups, the key is as follows: light stipple, Totonac monolinguals; heavy stipple, Totonac-Spanish bilinguals; diagonal hatch and solid black, Spanish monolinguals. For Spanish monolinguals two symbols have been used. The individuals represented by solid black are definitely intrusive in Tajín, and the census records indicate that they were associated with the local oil camp. Of the remaining Spanish monolinguals, represented by diagonal hatch, it is difficult to say how many are intrusive. Presumably, most are temporary residents, because 7 or 8 years later, the occurrence of Spanish monolinguals in Tajín is negligible (cf. fig. 2).

spring of 1948, but no effort was made to correct the age of individuals. As will be seen below, there must be such a wide range of error in the ages that a change of a year did not warrant the clerical work involved.

The 1940 census credits Tajín with a population of 718 persons. Our count, taken some 8 years later, yields 1,102. However, of this total, five looked a good many families which did not have children of school age.

Both figures 1 and 2 exhibit the expectable pyramidal form, despite a certain amount of unevenness. Foster (1948, p. 28) has noted that in Tzintzuntzan age is reckoned in current, not in lapsed time; but in Tajín, an individual generally thinks of his age in terms of *años cumplidos* (com-

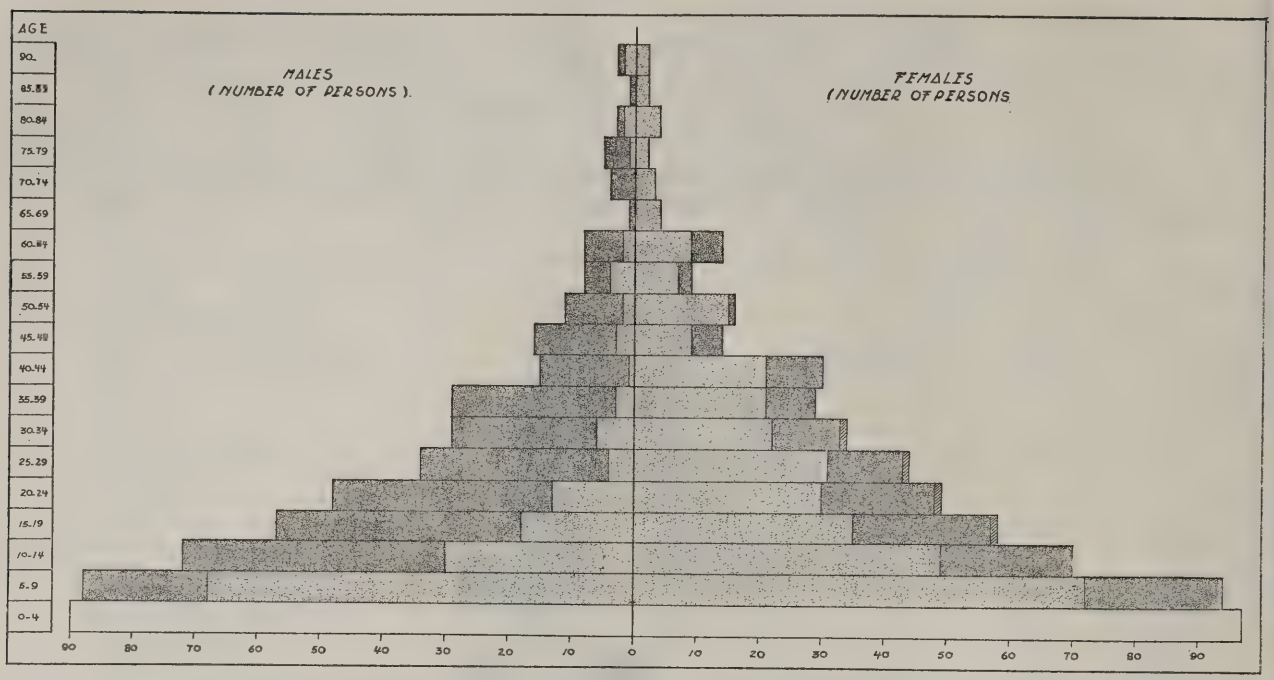


FIGURE 2.—Composition of Tajín population. Age, sex, and speech are shown; the data come from our own 1947–48 census (see table 8). The key is the same as that of figure 1, except that all Spanish monolinguals (4 cases only) are represented by diagonal hatch.

pleted years). For this reason, we have followed the usual age groupings, not the corrected form used by Foster.

It is little short of a miracle that both figures show a certain semblance of symmetry, for the Totonac are incredibly casual concerning age. That of children seems to be fairly well known, and a few families even treasure a baptismal certificate or a registry paper from Papantla. However, relatively few births are recorded. Ideally, the parents of a newborn infant report the birth to the local municipal office, where they are given a paper to be presented to the authorities in Papantla. There, they are expected to buy a special document and to present witnesses. The total cost comes to about $5.00 pesos, which is regarded as a needless extravagance. As a consequence, few births are registered.

Age among the adults is largely a matter of guesswork, and several extreme cases may be cited as examples:

Carmen Pérez Reyes claims to be 80 years old. But her youngest child is 20, as attested by a birth certificate. Accordingly, it seems likely that the mother is some 20 years younger than she believes.

Vicente de León gives the age of his wife as 60, although she has a daughter 8 years old. He calculates his own age at 85. However, for the Federal census, in 1940, he gave his age as 58; for a local school census, in 1945, as 65 years. But when our census was taken, in 1947, he suddenly attained the age of 85. As a matter of fact, he must have been close to 80, for he remembers the Ojital y Potrero subdivision of lands in 1876 and believes he was 8 or 10 years old at that time.

José María García calculates the age of his daughter at 19; she herself thinks she is 30.

Not all informants overestimate their ages:

Nicolasa de León, who appears to be in her 50's, claims to be 35; and her brother-in-law, Telésforo Hernández, apparently about the same age as she, coyly admits to 30 years.

It seems likely that the errors have canceled one another; at least, both figures 1 and 2 suggest a relatively normal decrease in population according to age. Even if the data are only approximately correct, it is evident that the populace of Tajín is essentially young; according to our census, 73 percent of the entire community is under 30 years of age; 84 percent, under 40.

*Sex ratio.*—The 1940 census shows an identical frequency of males and females—359 of each sex. On the contrary, our count, which is more complete, reveals a noticeable preponderance of females—522 males, 575 females. In the first two

age brackets (0–4 and 5–9 years) there are more females; in the adolescent groups the ratio is roughly equal; but between 20 and 34 years, females again are more plentiful, and they are particularly strong in the 40–44 year age group.

The numerical superiority of women is not owing to a marked difference in the ratio of the sexes at birth (p. 68), so other factors must be responsible. Higher infant mortality among males (p. 68) is significant; so also is homicide, which takes a heavier toll of men than of women.

In our opinion, the numerical disparity between the sexes does not result from the migration of males to urban centers. This is at variance with the opinion expressed in conversation by Ing. José García Payón, whose acquaintance with Tajín is of many years standing. He feels that there has been a sharp reduction in the population as a whole within the past few years, owing to a movement to Poza Rica and to new settlements which have been founded along the Poza Rica-Tuxpan Highway. We find no concrete evidence of any such general reduction, and although we made more or less systematic inquiry, there is record of only a very few isolated moves to Poza Rica and Papantla, none to the Tuxpan Highway.

*Speech.*—The distribution of monolinguals and bilinguals is about what one would expect (fig. 2). In the second age group (5–9 years), most of the children of both sexes are monolingual; during the next age group (10–14), the effects of schooling are evident, and among the boys, there are more bilinguals than monolinguals. More or less successively, the men become increasingly bilingual, presumably as their contacts with Spanish-speaking Papantla are intensified. Relatively few girls attend school, and the percentage of monolinguals among females continues high; no woman above the age of 65 speaks Spanish.

The situation as a whole may be summarized thus:

| | Males | | Females | | Total population | |
|---|---|---|---|---|---|---|
| | Number | Percentage of total males | Number | Percentage of total females | Number | Percentage of total population |
| Language disregarded (children, 0–4 years) | 90 | 17 | 97 | 17 | 187 | 17 |
| Totonac monolinguals | 159 | 30 | 338 | 59 | 497 | 45 |
| Totonac-Spanish bilinguals | 273 | 52 | 136 | 24 | 409 | 37 |
| Spanish monolinguals | 0 | -------- | 4 | 1 | 4 | (1) |
| | 522 | 99 | 575 | 101 | 1,097 | 99 |

[1] Less than half of 1 percent.

Of the total of 186 families, 30, or about 16 percent, are monolingual. The distribution of these families seems not to be significant, although there is a sizable cluster living in the southernmost parcels of the community; for the most part, these are related households of the very numerous Morales family. Nor is there any perceptible relationship between language and economic status; some of the most prosperous citizens are monolingual and vice versa.

Expectably, however, language and clothing are rather intimately related, and most of the bilinguals are found among those enterprising Totonac who have adopted "city" clothing—that is, shoes and trousers for the men, and ordinary dresses for the women. This association will be demonstrated concretely in Part 2 of this monograph. There also is an expectable relationship between language and those who hold or have held public office; the latter posts are confined to bilinguals. Moreover, the leaders of the dance groups also are chosen from among bilinguals; it is said that otherwise they are not able to train novices adequately.

It is evident that the Totonac language still is vigorous in Tajín. Spanish monolinguals are confined to four women, two of whom are visitors from elsewhere. The third is a woman from Papantla, married to Lorenzo Xochigua; although she understands Totonac, she is unable to speak it. The fourth is a young Totonac woman raised in this same household. During most of her life she has been in close contact with this non-Totonac element, and as a consequence, speaks only Spanish, although she understands Totonac.

Most settlers from outside learn the language. Juan Castro, a storekeeper, came to Tajín 25 years ago; he now speaks Totonac. Years ago, Isaac Méndez brought his bride from Papantla, and she too, has learned the language. Even in Papantla, virtually all shopkeepers speak Totonac, and vanilla buyers likewise are forced to learn the native language in order to make their purchases.

Totonac is not losing ground in Tajín, in the sense that it is being replaced by Spanish. Assuredly, the increase of bilinguals during the last decade has been pronounced, but it seems likely that for a good many years to come, Totonac will exist side by side with Spanish. Increased school facilities in Tajín may change this trend. However, the adolescent son of Lorenzo Xochigua,

whose mother is a Spanish monolingual, actually learned Totonac when he started to attend school. In short, the school undoubtedly intensifies the bilingual aspect, but there is little indication that it tends to replace Totonac by Spanish.

### BIRTH STATISTICS

We have precise birth records for 56 women of Tajín. The number of births varies from 1 to 12 per woman, and there is a total of 279 offspring, or an average of 5.0; the mode is 4. However, the great majority of these women are of child-bearing age, so that the actual birth rate is somewhat higher. In the entire community, there are only 49 women above the age of 50, for 14 of whom we have data. They are credited with a total of 92 births, or an average of 6.6.

The "fertility ratio" also suggests that Totonac women are prolific. It is calculated on the number of children under 5 years of age and the number of women between 15 and 44. Within these specified age limits, Tajín has 187 children and 244 women (table 8). Accordingly, the ratio is 766.4, whereas for Mexico at large, settlements with 10,000 inhabitants or less, show a ratio of 696.2 (Whetten, p. 390).

Each of the 56 women was asked at what age she had borne her first child. Owing to the Totonac indifference to age, the figures are far from reliable. In some cases, no estimate could be made. In others, the age was calculated roughly from the present age and that of the eldest child, but the results were by no means reassuring, for on this basis, one woman was 11, and another was 50, at the initial birth. However, again, the errors appear to cancel one another. We have excluded the two extreme cases of 11 and 50 years; for the remaining 39 women for whom we have data, the average age at the first birth is 20.5. Our guess is that this age may be somewhat high.

Without precise records over a period of time, it is impossible to make accurate statements concerning the interval between births. The Totonac themselves say flatly that it is 2 years, and this seems not to be far wrong.

There is no pronounced difference in the ratio of the sexes at birth (cf. Foster, 1948, p. 228). Of the 279 offspring, 137 are male and 142 female. However, it is evident that in this small random sample there is a higher mortality among males. Of the 137 boys, 27 died either at birth or during the first year, as compared to 8 females. A total of 35 infant deaths is approximately 12.5 percent of the total births, or a mortality of 125 per thousand. This is somewhat higher than 121 per thousand, which is the average rate for Mexico as a whole (Whetten, p. 328). However, the latter is reckoned on the basis of live births; and our figures include not only live births, but premature, stillborn, and fatal births (table 9). Accordingly, infant mortality in Tajín probably coincides pretty closely with the average for Mexico at large. Apparently about half the children born die before the end of the fifth year (cf. Foster, 1948, p. 230); but a child who completes the first year seems to have a fair chance of survival. There is little apparent relationship between infant mortality and the economic position of the family.

The causes of death, as given by informants, are listed in table 9. In most cases, the cause is unknown. Next in frequency is "fever," which may include intestinal fevers as well as malaria. Other causes are diverse. Inasmuch as some of our women informants are elderly, a number of the offspring died during adult life (table 9). In passing, it may be noted that of the eight male adult deaths, five are from homicide. This is not wholly a matter of chance.

TABLE 9.—*Causes of death among 61 individuals*

| Cause of death | Males | | | | | Females | | | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | At birth [1] | 0–1 year | 2–5 years | 6–15 years | Adult | At birth [1] | 0–1 year | 2–5 years | 6–15 years | Adult | |
| At birth [1] | 6 | | | | | 1 | | | | | 7 |
| Unknown | | 5 | 1 | 1 | | | 4 | 1 | 3 | 1 | 16 |
| Bronchitis | | 1 | | | | | | 1 | | | 2 |
| Fever | | 8 | 3 | | 1 | | | 1 | | | 13 |
| Typhoid | | 1 | | | | | | | | | 1 |
| Dysentery | | 1 | | | | | 1 | | | | 2 |
| Intestinal upset | | | | | 1 | | | | | | 1 |
| Indigestion | | | | | | | 1 | | | | 1 |
| Worms | | | | 1 | | | | | | | 1 |
| *Alferecia* [2] | | 1 | | | | | | | | | 1 |
| Cough | | | | | | | | | 1 | | 1 |
| Whooping cough | | 1 | 1 | | | | | | | | 2 |
| Measles | | | | | | | | | 1 | | 1 |
| Rheumatism | | | | | | | | | 1 | | 1 |
| Mange | | 1 | | | | | | | | | 1 |
| Magical causes [3] | | 2 | | | | | 1 | | | | 3 |
| Alcoholism | | | | | 1 | | | | | | 1 |
| Homicide | | | | | 5 | | | | | | 5 |
| Childbirth | | | | | | | | | | 1 | 1 |
| Total | 6 | 21 | 5 | 2 | 8 | 1 | 7 | 3 | 6 | 2 | 61 |
| Total males | 42 | | | | | | | | | | |
| Total females | | | | | | 19 | | | | | |

[1] Premature births, stillbirths, and fatal births have been grouped.

[2] We are uncertain how to translate this term, which refers to a malady confined to infants of 1 or 2 months of age. The child is said to cry until it turns purple, and it may froth at the mouth. It cannot be epilepsy, as some dictionaries indicate, because recovery often is complete.

[3] One death is attributed to *malviento*. For two others, it is said that the child "cried and cried" (*chilló y chilló*) before it died. This constant whimpering generally is diagnostic of *malviento* or of some other unnatural illness.

Sterility seems to be infrequent and we can give no precise figures. However, in a number of polygynous unions, the husband is said to have taken a second wife because the first produced no offspring. And we know of at least one man who, despite a series of wives, is said never to have had children. Infanticide is not common, but two specific cases were reported; details will be found in Part 2 of the report.

We can made no accurate statement concerning the increase in population in Tajín during the past few decades. We place little reliance on the figures below, which are included chiefly for the sake of completeness:

| Year: | *Males* | *Females* | *Total* |
|---|---|---|---|
| 1900 [1] | 128 | 143 | 271 |
| 1921 [2] | 323 | 360 | 683 |
| 1930 [3] | 386 | 453 | 839 |
| 1940 [4] | 358 | 360 | 718 |

[1] Mexico, Secretaría de Fomento . . . Censo general . . . 1900.
[2] Mexico, Departamento de la Estadística Nacional. Censo general . . . 1921.
[3] Mexico, Secretaría de la Economía Nacional. Quinto censo de población, 1930.
[4] Mexico, Secretaría de la Economía Nacional. Sexto censo de población, 1940.

## MORTALITY

Our figures concerning mortality are both incomplete and inaccurate. They are based upon the municipal records in Papantla, which appear to be kept casually. Assuredly, most infant deaths are not reported, but, theoretically, all adult fatalities are recorded in Papantla.[2] In case of homicide, the corpse is taken to Papantla for autopsy, and it seems likely that the record of homicides is complete.

Records are available for 1945, 1946, and 1947; below, the deaths have been numbered and arranged in order of age:

| 1945: | *Age in years* | *Sex* | *Cause* |
|---|---|---|---|
| 1 | 4 | Female | Measles. |
| 2 | 15 | Male | Homicide. |
| 3 | 21 | Do. | Do. |
| 4 | 23 | Female | Fever. |
| 5 | 25 | Do. | Do. |
| 6 | [1] [28] | Male | [Homicide.] |
| 7 | 30 | Female | Nephritis. |
| 8 | 40 | Male | Anemia. |
| 9 | 60 | Female | Tuberculosis. |
| 10 | 68 | Male | Bronchitis. |
| 1946: | | | |
| 1 | 14 | Do. | Homicide. |
| 2 | 27 | Do. | Do. |
| 1947: | | | |
| 1 | 55 | Do. | Do. |
| 2 | 70 | Do. | Intestinal infection. |

[1] The municipal records for this particular death are incomplete. However, we are acquainted personally with the case and have given the approximate age, as well as the cause of death.

[2] We know of two local residents who, ailing, have left Tajín for medical attention, one going to Papantla, the other to Huauchinango. Each died outside the community, and quite naturally the deaths are not recorded for Tajín.

In no case is an infant death recorded above. Either 1945 was an unfortunate year for the Tajín Totonac, or the subsequent records are incomplete. It will be noted that of the total of 14 deaths, in the course of 3 years, 6 are attributed to homicide; in other words, more than half of the total male fatalities are homicidal. This accords with the high frequency of homicide given in table 9. Moreover, the Papantla municipal records for the adjacent Totonac community of Ojital are corroborative. They show a total of 14 deaths during the same 3 years. Of these, 8 are homicides, and another is violent; its cause is said to be "fractured skull and contusions of the thorax." Even if these figures are not accurate, it is clear that homicide accounts for a very large percentage of Totonac deaths, especially among males.

In case of homicide, there is no chance of an incorrect diagnosis, particularly since the Totonac technique of liquidating an enemy generally includes both firearms and machete slashing. However, probably little reliance is to be placed on the other alleged causes of death. Measles, fever, intestinal infection, nephritis, anemia, and bronchial complaints all figure. "Fever" is a convenient term which may include malaria, as well as intestinal fevers. There is a certain amount of malaria in Tajín, although it seems pretty well concentrated in definite areas; part of the *fundo legal*, for example, seems entirely free of mosquitoes; part is infested. Few people complain of stomach and intestinal difficulties, although two men, well along in years, asked for suggestions to relieve kidney disorders.

Bronchial difficulties seem to be fairly common. We know of five deaths within recent years, and one some time ago, which presumably are to be attributed to tuberculosis (called *secapalo*); two were within the same family. In addition, a young man has a neck lesion which refuses to heal; a Papantla physician diagnosed his case as scrofula. Inevitably, tuberculosis is fatal. There are no medical facilities in Tajín, and even if a Papantla doctor is consulted, because of living conditions, it is difficult for a Totonac to follow the recommended treatment of rest and special diet.

We are not in a position to comment concerning the prevalence of venereal disease, but there are no obvious cases. Two middle-aged women

of our acquaintance suffer severely from varicose veins; and among the younger women, childbirth takes a considerable toll. We know personally of six such fatalities, four previous and two subsequent to the official records given above.

## EXPLOITATION OF NATURAL RESOURCES [3]

Tajín is essentially an agricultural community, and exploitation of natural resources is focused upon the cultivation of the land. However, before considering agriculture, we shall see in what other respects the Totonac take advantage of the resources at hand.

### WATER SUPPLY

The highest land in the community lies toward the north and northwest (in the vicinity of parcel No. 97, map 8). Here, a number of minor arroyos rise and flow south or southeast, to enter the Arroyo de Tlahuanapa, which forms part of the southern boundary of Tajín. None of our maps indicates the course of these minor streams, and relief is so complex and the courses so meandering that we did not attempt to add them to the base maps. Although these arroyos are, for the most part, annual, they provide the chief water supply during most of the year for the entire community.

Paradoxically, despite high humidity and relatively heavy precipitation, there is a shortage of water almost every spring (p. 47). Papantla faces a chronic water problem; and in Tajín, during years of insufficient rainfall, families who live in the northerly parcels may have to travel between one and two hours, to obtain water from the perennial Arroyo de Tlahuanapa. For those who have beasts of burden, this is an inconvenience; but for those who must travel on foot, it is a genuine hardship. It is said that because of the shortage of water several families have left Tajín, to settle elsewhere (in Talaxca, for example). However, since many own their lands and their homes, the bulk of the population endures the inconvenience.

There is scant hope of making water available for the fields in time of scarcity. The zone is so rugged and there is so little running water that irrigation is virtually out of the question, except on a very minor scale. About the only gesture made at present to alleviate the situation is to bring the image of St. Joseph from the neighboring Totonac village of Espinal each spring. Considerable ceremony surrounds this visit, and it is thought that if the saint is well treated, he will intervene, and the rains will come in time to save the crops.

The obvious answer to the problem of drinking water would be wells, and several have been attempted, with indifferent results. Two brothers, Lorenzo and Bernabé Xochigua, with the assistance of six or eight neighbors, excavated to a considerable depth in the floor of the Arroyo de Ortiga, which passes near their houses in the *fundo legal*. They were unable to penetrate the hard subsoil (in this case, *tepetate*), and although their "well" retains water for some time after the flow in the arroyo has dried, it cannot be considered successful. It is used only in times of shortage, and, ordinarily, water is taken from a small cavity dug in the bank of the arroyo, into which the water from the latter filters (pl. 4, *a*). A well in parcel No. 91, dug in the floor of a now dry arroyo, has water in abundance during the rainy season, but in time of scarcity, it too fails. Ing. José García Payón attempted a well in the nearby archeological zone but, again, without success.

Tajín is not far from the famous oil fields of Poza Rica, and formerly (from the early 1930's to 1940) there was an oil camp in Tajín, near the pyramids (apparently in parcel No. 76). For the use of the camp, water was piped from the Arroyo de Tlahuanapa, and although the oil company had promised to supply water to the *fundo*, the system was dismantled when the camp was abandoned. In the course of drilling, the company is said to have hit water—at a depth of 500 m., according to one informant. At such depth, water is of little practical advantage to Tajín, owing to the cost of boring and to the mechanical difficulties of bringing in the necessary machinery. Moreover, one or two wells would be of limited benefit to the community at large, for the majority of the populace is widely scattered on individual parcels of land.

The problem of potable water in Tajín was discussed with Mr. Richard Greeley, who felt that the only solution would be to pipe from the arroyo, with supply stations at given intervals. This would require the installation of a pump and a

[3] Numbers in parentheses following the name of a plant refer to the herbarium catalog in Appendix C.

system of pipes, and the expense would not be warranted—again, because of the disperse settlement pattern. Although the few families of the *fundo* might be supplied, those on outlying parcels still would be without water in times of shortage.[4] Unfortunately, it would appear that there is no easy and economical solution.

In any case, although water shortage is troublesome, most of the Totonac are apathetic. The women haul the water, and it is they who are most inconvenienced when springs and arroyos dry; the men regard the problem with admirable detachment, except when their cultivated fields are threatened. Yet any real solution would require wholehearted backing of the male population.

Even if water storage were solved on a sufficient scale to assure a year-round supply for each household, there is little chance that the custom of hauling water from the spring or arroyo would be abandoned, simply because of its social function. The daily chore of the women and girls of every family is to carry water; young boys assist occasionally, but adult men, only under very special circumstances.[5] However, boys and men loiter along the trail, or in the shrubbery near the arroyo, and the arrival of the girls gives the young people of both sexes one of their few opportunities to converse. Marriages and illicit unions result frequently from these encounters. A mother keeps a weather eye on her daughters, and twice during our stay, an alert mother and aunt zealously protected their young charges by throwing stones at the boys who were making advances.

Hauling water is almost a rite, and probably every woman has a well-established pattern.

Ana Méndez selects a jar of small aperture and, as a cover, a receptacle formed of the half shell of the tree calabash. She also selects a cloth or towel to place on the head, beneath the jar, on the return trip. After washing the utensils well, she grasps the olla with the right hand, holding the base against her waist, with the mouth forward, and covered by the calabash. The towel likewise is carried in the right hand, leaving the left free. Upon reaching the arroyo, she arranges three stones in the shape of a triangle to support the jar. Next, she washes her hands and feet in the stream; then, using the gourd as a dipper, she fills the jar from the little cavity in the bank of the arroyo. She arranges the cloth on her head; sets the olla atop; and heads for home.

In the part of the *fundo* where we lived, drinking water invariably is collected from a shallow cavity dug in the arroyo bank; but water for laundry and general household use comes from the open arroyo, some distance upstream. Every kitchen has several covered jars in which potable water is stored; ordinarily, these sit on a narrow shelf, supported by four uprights. Drinking water is not boiled and receives no special treatment. Water for general use is stored in stationary jars outside the house, adjacent to the spot where the laundry is done. Usually the jars are set on low stones, not directly on the ground. They may be covered to keep out dust and rubbish, and frequently they are surrounded by a little fence of upright sticks or canes, to protect them from livestock (pl. 13, *b*).

The water in Tajín is extremely hard, and if allowed to sit, a large quantity of white sediment settles in the bottom of the vessel. Moreover, the water effectively resists lathering. To overcome this defect, the housewife tosses several handfuls of clean wood ash into the water to be used for laundry. This results in a sort of lye-water (*agua de lejía*) in which the soap lathers sufficiently to wash clothing. Lye-water also is used by some for washing the hair.

In time, the ash loses its potency. It then is removed and thrown against the exterior of the vessel, while the latter is filled with clean water and fresh ash. Many ollas are buried their full height in this discarded ash paste (pl. 13, *b*, ash

[4] The possibility of catching the run-off from the roofs also was discussed with Mr. Greeley, but here, again, there are major difficulties. (1) We are by no means sure that the precipitation in the months immediately preceding the shortage is sufficient, since it falls in the form of light, continuous drizzles. (2) The number of tiled roofs is limited, and run-off from a thatched roof probably would be far from clear. (3) Although gutters could be constructed easily, through a series of split, overlapping, bamboos, hung from the eaves, storage facilities are more difficult of solution. (4) Since the subsoil is calcareous, a cistern presumably would have to be lined with stone or brick. But stone is extremely scarce, and brick would have to be hauled from El Chote, near Papantla. Moreover, no Totonac knows how to lay brick, and a mason from Papantla would have to be imported. (5) Unless cisterns were well covered, the breeding of mosquitoes would aggravate an already existing occurrence of malaria. (6) The Totonac almost certainly would have an aversion to cistern water, since they are convinced that rainwater breeds "worms" (*sabañones*) if allowed to stand more than a few days. (7) The use of a series of large earthenware jars for water storage was suggested to Mr. Greeley, but his calculations showed, at once, that an adequate supply could not be provided through such small-scale storage.

[5] Bernabé Xochigua hauls water frequently, because his wife is ailing; he receives general approbation as a considerate husband. However, one of our friends, well along in years, lives with a much younger woman, of whom he is extremely jealous. Because he suspected she was chatting with men along the trail, he forbade her to leave the house. Following this gesture, he had no choice but to haul water himself, to the vast amusement of the neighbors. He endured quiet ridicule for a few days, after which the woman resumed her usual trips to the arroyo.

paste in middle ground hides embedded jars). The Maya apparently have the same habit of accumulating ash about the outside of the water container (Wauchope, p. 138, pl. 36, *c*, *d*).

### LUMBER AND FUEL

In the Papantla zone, lumbering seems to have started early. By 1581, timber, especially cedar (No. 219), was being cut on a large scale and shipped by water to San Juan de Ulúa, where it was used in the construction of houses and vessels (Relación de Papantla). It is difficult to know when the forests of the Tajín area were cut, but there seems to have been considerable *monte alto* 60 or 70 years ago. Our guess is that the timber was not exploited, but was frittered away in the course of clearing lands for milpas. All local farmers agree that planting is much easier on fields recently cleared of *monte alto*, because for several years weeds present no problem. On the contrary, the struggle with intrusive vegetation is incessant on lands formerly grown to *monte bajo*. Accordingly, if there is opportunity to choose between the two types of forest, the normal inclination is to fell *monte alto*.

Relatively little virgin forest still exists at Tajín (map 6); and, except for three parcels on the western fringes, the stands are of very limited extent. The Totonac have come to appreciate what little remains of *monte alto*, because it produces the woods and lianas, used in house building and for other domestic purposes. Magdaleno Méndez is said to plant on rented land, so as to preserve what little virgin forest is found on his own property. Arnulfo García owns two of the westerly parcels (Nos. 177, 178) of virgin forest. From time to time, he sells a bit of timber, but he refuses to permit cutting on a large scale, proclaiming, "May I not see the destruction of my lands; later, let my sons do what they like with them." He also is the owner of parcel No. 124, which adjoins the *fundo* on the south; here, too, he refuses to allow extensive cutting, in this case, for fear the little Arroyo de Ortiga may dry.

*Monte alto* contains many fine hardwoods, of which the most prized are *cedro* (cedar), *alzaprima*, *chijol*, *caoba* (mahogany), *zapote chico*, *moral*, *palo de rosa*, and *escolín* (Nos. 219, 206, 176, 194, 191, 324, 171, 338, respectively). Of these, the cedar probably has the widest general utility; it is considered preferable to mahogany because of its greater resistance to borers. The most durable of all the woods apparently is the *chijol*, although it is said that "any wood will last longer if the tree is felled in November, when the moon is in conjunction." Most of these hardwoods now are scarce in Tajín, since the virgin forest has been pretty well cut. For the frame of the house, probably the *zapote chico* and the *alzaprima* are most frequently used today, simply because they are somewhat more plentiful than the others. In addition, a great quantity of other woods are put to a variety of uses. They will be mentioned later, in connection with housing and various manufactures.

In spite of this repertoire of fine woods, which must have been abundant until relatively few years ago, the Totonac are extraordinarily inexpert at lumbering; "it is difficult to cut a plank straight." Juan Villanueva, formerly of Polutla, and Bartolo Simbrón are said to have a fair skill, and a couple of others are willing to try their hands. However, if a resident of Tajín wishes to build a house with squared beams or with plank walls, or if he wishes to have furniture made, he generally buys the necessary trees, and then looks outside of Tajín for a sawyer (*aserrador*). Every year, a few outsiders—generally highlanders (*arribeños*) from some unspecified parts of the Sierra, but some, at least, from Cuetzalán—come looking for work. Among them, some may know how to saw lumber and may bring the necessary tools. An *aserrador* is given his meals, and his work is paid by the piece, at a rate fixed in advance (p. 189).

Dependence upon outside labor for dressed lumber does not mean that a house cannot be built without such assistance. Most of the houses have both posts and beams unsquared, and the walls are made of upright saplings or of bamboo. In this case, the Totonac himself cuts the necessary timber, either on his own land or on that of another, after arranging the price with the owner.

Wood is the universal fuel in Tajín. Occasionally, during chill weather, a fire is built on the earth floor of the house, and a sizable trunk is allowed to smoulder, for the heat it produces; it is referred to jocosely as a "stove." Day in and day out, every family uses wood as the fuel for cooking. Dry corncobs are utilized "when there

are any," to "help the wood burn." Never, so far as we know, is reliance exclusively on corncobs.

Sometimes brush and small trees are cut in an old, abandoned maize field (known as an *acahual*); once dry, they serve as fuel. However, most firewood is gleaned from current milpas. When the latter are cleared for planting, the trees are felled, allowed to dry, and fire is set to them. Trunks and heavier branches seldom burn completely. Later, they may be dragged to the edge of the clearing; sometimes they are left unmoved, and the maize is planted about them. This half-burned firewood is collected from one's own cornfield or from that of a friend, who has given permission.

Certain types of wood burn better than others. The *zapote chico* (No. 191) is of little use; so also is the *chaca* (No. 228). The popularity of the latter is not enhanced because of a local saying, "He who burns *chaca* becomes poorer than ever." Laurel (presumably No. 130) and akás?ti (No. 218) burn rapidly but are considered good. Other acceptable firewoods include: *ojite* (No. 98), *chijoï* (No. 176), *alzaprima* (No. 206), at least two of the three *capulines* (Nos. 21, 41, 85), and *quince* (no specimen).

The collection of firewood generally is a chore for the man; he cuts the wood with a machete and hauls it to the house, using a head tump. This often is an early morning task, although when a man works in his milpa, he usually brings the fuel in the evening, when he returns home. Women who gather firewood usually carry it on the head, without the aid of a tump. A moth larva (of the family Psychidae)[6] known as *carga-palitos* (wood-bearer; maksakná) produces a long, slender sack, which incorporates odd bits of stem, fiber, etc. In the bag is placed tobacco and a clove of garlic, or an avocado leaf, garlic, and mineral tar (*chapopote*). It is tied to the wrist or the neck of a small boy, so that when he is grown "he will be able to find firewood, even if there is none." According to another account, the bag is tied to the lad's waist, in the belief that, once adult, he will be able to carry wood without injury.

Firewood often represents a very handy means of augmenting the cash income. Wood sold in Papantla helped provide working capital for the construction of the new Tajín school. Each week, the family of Magdaleno Méndez takes a load of wood to town, to help defray the board of a young son who attends school there. And almost every Sunday, two or three men from Tajín head for Papantla with donkeys laden with firewood. The latter brings about $4.00 pesos a load.

Ordinarily, a man cuts the wood for his own household, but occasionally he engages someone to do it in his stead. The price is $4.00 to $6.00 pesos the *tarea* (8 cubic *varas*, or yards); and since the latter measure is the amount generally cut in a day, the price is roughly equivalent to a daily wage. Lands of virgin forest almost never are rented, but one who rents a plot with second-growth timber has the right to cut what he likes, provided he has paid the rent in advance. Ordinarily, the renter clears the land and sells the firewood. Eduardo Núñez lets his lands of *monte bajo* on a different basis; he retains the wood and charges no rent. In this case, the renter clears the land and the owner sells the wood.

Firewood is stored in a highly characteristic manner. The sticks, cut to uniform length, are stacked between the outer wall of the house and a pole set vertically in the ground, something less than a meter removed (pl. 13, *c*), its tip tied by a short length of rope or liana to one of the uprights of the house wall.[7]

### OTHER EXTRACTIVE ACTIVITIES

Stone is scarce, except about archeological sites. It is little used, although occasionally a flagged path may be laid across a muddy house clearing. There is no quarrying as such, and stone for the masonry school was fished out of an archeological mound, on the eastern fringes of the *fundo legal*.

At present, the entire supply of lime (*cal*, kašta) comes from outside the community, and the small amount required by every household for the preparation of certain maize foods (p. 151) is provided by occasional vendors who come from the little village of El Chote, on the outskirts of Papantla.

[6] Identification through the kindness of Dr. Cándido Bolívar.

[7] Similar disposition of firewood probably is common in the Huasteca. We observed it occasionally in the Tamazunchale-Tancanhuitz area, and it is suggested by an indistinct photograph taken years ago at Tancoco (Starr, facing p. 284, largest house, in center). The Maya may also have a parallel manner of stacking fuel, although from one photograph, the wood is piled not against the exterior of the house, but inside the kitchen, between the wall and a vertical post (Wauchope, pl. 31, *a*).

Lime seldom is required in quantity, since domestic architecture is not of masonry. But when the stone schoolhouse was built, lime was hauled from El Chote and Mesillas, where there are commercially exploited deposits. Formerly, there were at least two ovens for burning lime in Tajín, one at the house of Magdaleno Méndez and the other at that of Donato Santes.

There is no mining, and the brief flurry of oil exploitation, in the 1930's, has been mentioned previously (p. 46). Of this intrusive petroleum element, little trace remains in Tajín, although the 1940 Federal census lists a number of extraneous individuals as employees of the oil company. The ruins of the old camp are effectively hidden by dense vegetation; and, culturally, the enterprise seems to have left surprisingly few scars. The Totonac, it is said, had little direct contact with the outsiders, and their efforts were confined to work on the trails. A couple of parcels in Tajín (Nos. 76, 126) remain officially in the name of Petróleos Mexicanos, and the threat of drastic acculturation, which would convert Tajín into a miniature Poza Rica, is not entirely past. In fact, now, in 1949, it is an imminent danger, since two new wells are being exploited successfully in San Antonio, one of the Ojital centers, on the very borders of Tajín. In a way, it has been fortunate for us that the zone potentially is oil land; only for this reason has it been possible to obtain local maps to large scale, with individual holdings indicated (map 8, for example).

## HUNTING

The sixteenth-century Relación de Papantla reports an abundance of deer and rabbits, as well as "many parrots and many monkeys (*micos*) and martens, and very beautiful macaws." These days are long since past. "Years ago, it was not necessary to go to Papantla for meat," because there were deer, peccary, and armadillo. Now only small game is found near Tajín, and it is not plentiful. For deer or peccary, one must go to *monte alto*, usually to the great stands to the west, about Palma Sola.

Of the big game animals, deer was the most plentiful. Two types are recognized: one large (*venado*, ju·ki?), and one small (*temazate*, *cuachichoco;* skátan, stákan). As recently as 15 years ago, a few deer could be found along the borders of Ojital and Tajín (parcel Nos. 97, 98, etc.). Some still frequent the lands of Gildardo Muñoz, which adjoins Tajín on the south, but these are strays which have wandered from *monte alto*.

We were told of several methods of hunting deer, all with firearms. In his youth, Juan Bautista used to go forth at night, with a (commercial?) jack light. Nowadays, it is more popular to hunt by day, in groups, either with or without dogs. In the latter case, three or four hunters enter the virgin forest, leaving a distance of 80 to 100 meters between one another. Thus separated, and with firearms ready, they advance, side by side, toward a road or clearing, "breaking the forests," as they go. Walking is not difficult, because *monte alto* has little undergrowth. The hunters make a great clatter, to startle the game, and each toots on a whistle—a simple length of cane, open at one, closed at the other—so that his companions may not lose track of him. Such a drive may last 8 or 10 hours.

When dogs are used, more hunters are necessary. A man who knows the ground and the trails of the deer directs the drive. He stations a companion at each of the trails, forming a large, irregular circle of spaced hunters. When each is in his place, a horn is blown and the dogs are freed. They run into the forest, scattering the deer. The latter try to escape along their usual trails but are intercepted by the stationed hunters.

Four hundred years have passed since the first contacts with European culture, and in Tajín there is no recollection of hunting with the bow. However, the second husband of Dorotea de la Cruz, one Miguel Andrés, was a Totonac from the vicinity of Comalteco.[8] He used to tell the grandchildren of Doña Dorotea how they hunted in Comalteco in the old days, and one of these, Pedro Pérez, recalls the following:

> For deer, the root of the fig (*higuera*, No. 222) was twisted well, to form a noose, which was attached to a flexible stick set in the ground, presumably along the deer trail.
>
> Deer also were impaled. Several stakes, made from the heart of the *zapote chico* (No. 191), were planted in the deer trail, with the exposed tips well sharpened.
>
> The stakes seem to have been set diagonally, so that one point went upward, to the right, and the alternate

[8] Today, Comalteco has an insignificant occurrence of Totonac speech; no other native language is reported in the census. On the chance that the information left by Don Miguel may shed light on former Totonac hunting techniques, it is included here.

one, upward and to the left. The whole business was covered with leaves and branches. The dogs were let loose, and the frightened deer, attempting to escape, was impaled.

Don Miguel likewise is said to have described a deer call, used in April, to imitate the cry of the fawn. Two lengths of cane were cut, one of slightly greater diameter than the other. To the tip of the smaller cane, a cobweb was glued securely, and the end inserted in the larger cylinder. The hunter blew on the larger cane, prudently taking refuge behind a tree, because the onrush of the doe generally was violent.

In Tajín, it is customary to divide the meat between the several hunters. The heart is tossed in the fire and eaten at once, with salt; it is thought to give one strength. Generally, the head and hooves are smoked. If dogs are used in the chase, the head of the deer invariably goes to their owner, for his animals to eat. To sell the head is unthinkable; in that case, "the dogs never would be able to locate another deer." However, great care is taken that the dogs have no access to the hooves, which are hung high in a tree, or behind the house. Should the dogs eat them, "they will be unable to run after deer."

The deer provides important talismans for hunting. A membrane is cut from the throat and stuck to the corner of the house, to insure subsequent good hunting. "A small stone" (presumably bezoar) also is said to bring good luck in the chase. According to one informant, it is found in the heart; according to another, in the intestines. What is even more prized as a charm is a "worm" (*gusano*, stakulu·ajuke, šlikaɕinju·ke; latter, said to mean the diviner of the deer). All agree concerning its virtues, but its whereabouts is uncertain. One thought the worm was to be found in the hooves; another in the neck; generally, it is described as far up the nose of the animal, where there are two hollows, in each of which a "worm" lives. It must be extracted immediately the deer is killed or it will disappear. Francisco Villanueva once saw the worms but did not remove them. Santiago Simbrón has seen the hollows, but not the worm; his father, however, had one, and it brought him marked success in hunting. If shown to anyone, the charm loses its virtue. Stored in a small cane, with a little blood from the deer, it is kept in a corner of the house, and is carried only when the owner goes hunting. If there are a dozen men, engaged in a large drive, the deer infallibly falls to the owner of the "worm."

The peccary (*jabalí*, kiwipašni; kiwi, *palo;* pašni, *puerco;* free translation: forest pig) always has been less plentiful than the deer. Like the latter, today it is found chiefly in *monte alto*. The meat is not prized, at least by Pedro Pérez, who complains that it has the flavor of uncastrated hog.

The peccary is chased with dogs. When tired, it makes a stand in front of a large tree, generally one with surface roots. It grinds its teeth and gives vigorous battle with its tusks. The animal is dispatched by a shot, for it is considered dangerous quarry and no hunter cares to approach. Sometimes, the dogs are injured and it is advisable to cure them at once. The hair from the back of the peccary is collected and burned, and the resulting ash is sprinkled on the wound. This is parallel to the magical treatment given humans who are suffering from "fright."

Although relatively scarce, the armadillo (kúyu?) still is found occasionally. Its meat is considered tasty, similar in flavor to pork, and may be served with *mole* sauce (p. 158). A dog runs the armadillo into its hole in the ground; it enters head first and is extracted by pulling on the tail. The throat is cut with a knife or machete.

No other way of hunting armadillo was reported locally, but Pedro Pérez, on the authority of Miguel Andrés (p. 74), describes a deadfall used formerly in the Comalteco area. It was similar to that shown in figure 5, but the uprights were taller and were reinforced by the addition of securely tied crosspieces. However, the trunk was suspended in the middle, not at the end, with a quantity of stone on top, to give added weight.

From time to time, a lynx (?) (*onza*, tánkiwi, translated *cola de palo*, or *nalgas de palo;* wooden rump) is killed; the meat generally is eaten in *mole* sauce. Jaguar (*tigre*, la·panít) was found only in the days of *monte alto;* a smaller feline, lighter colored, called *tigrillo* (soke·mi·sin), is, however, killed once in a while. Similarly, a hunter may take an occasional crack at small animals such as the opossum (*tlacuache*, ištán), the raccoon (*mapache*), skunk (*zorrillo*, sásan), badger (*tejón*, škuti), and marten (*marta*, stawákua).

The badger may be hunted with dogs. If they grab the quarry, it is likely to cut their throats, and ideally, the dogs pursue the animal and hold it at bay until the hunter arrives. For the marten,

a special procedure is described. This animal is credited with a "very powerful stare"; when confronted by a lone hunter, it regards him with such intensity that he is unable to shoot. He may pull the trigger three times, but the arm refuses to fire. The remedy is dual: three hunters face the animal, evidently to dissipate the potency of its gaze, and

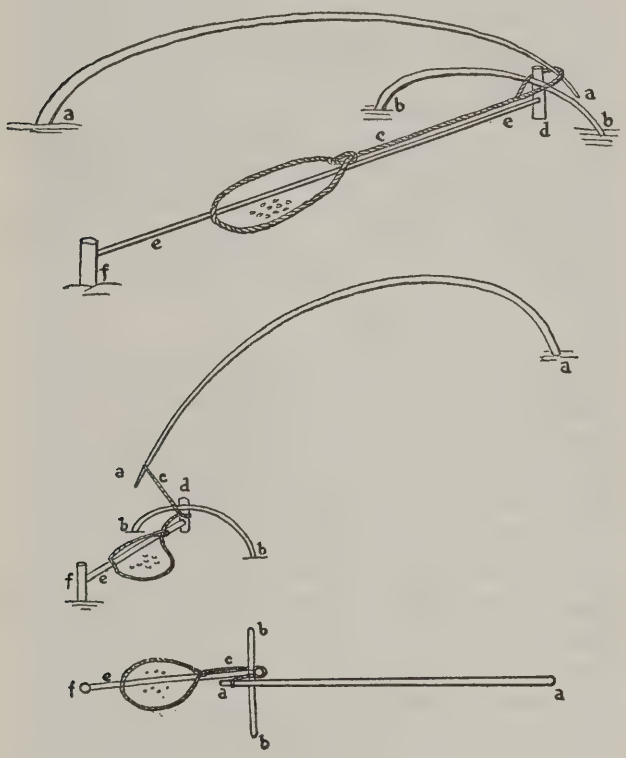


FIGURE 3.—Bird Traps. Two variants are shown.

*Upper:* *a*, A long pliable twig; its butt is planted in the ground; its tip is bent so that it nearly touches the earth. *b*, A shorter twig, arched, and both ends set firmly in the ground. *c*, A cord. One end is looped over the tip of *a*. A short stick (*d*) passes through the loop, on the far side of *b*, but does not touch the ground. *e*, The trigger, which is supported by contact against *d* and *f*; the latter, a short post set upright in the ground. Grains of corn, or other bait, are placed beneath the trigger and are more or less enclosed by the noose end of *c*, which is laid on top of the trigger. When the bait is disturbed, *e* falls, and with it, *d*; twig *a* is released and springs upright, and, ideally, the bird is caught in the noose of *c*.
*Middle:* Basically the same, but *a* and *e* are alined instead of being nearly at right angles.
*Bottom:* View from above, of the trap shown in the middle sketch.

the shotgun is "cured." First, it is fired at a nest of *papanes* or of *chachalacas*,[9] then is loaded with precisely seven shots. Following these elaborate preliminaries, the marten is dispatched. We are uncertain why this particular animal warrants so much fuss.

[9] Some of the local birds are listed in Appendix D; the *papan* is No. 25; the *chachalaca*, No. 4. In the succeeding paragraph numbers in parentheses following the name of a bird apply to this Appendix.

Birds are not hunted systematically or on very large scale. Some are not hunted at all; some are sought only because they are birds of prey or because they destroy the crops; others, because they are believed to have medical or magical properties;[10] and still others, because they are desired as pets. However, some birds—such as the *chachalaca*, *paloma*, *perdiz*, *torcaza*, and *tortolita* (Nos. 4, 24, 26, 36, 38)—are hunted primarily for food (table 21, Appendix D).

The arm in general use is an ancient type of muzzle loading fowling piece (*carabina*) (pp. 247–248). For birds, small boys use a sling, which consists of a Y-shaped stick, the arms of which are connected by a narrow strip of rubber. Adults rely either on the *carabina* or a trap.

A simple, basic trap (fig. 3) is used for birds in general, especially doves (*palomas*), and for other small game, such as rabbits or prairie dogs. Not everyone knows how to set such a contrivance. A boxlike trap (fig. 4) is used by Conrado García for catching doves. This type is not general in Tajín and perhaps represents the influence of the lad's stepfather, a Sierra Totonac from San Andrés Tlayehualancingo.

A model of the deadfall (fig. 5) used in former times by Miguel Andrés, of the Comalteca zone (p. 74), was made for us by Pedro Pérez. It is designed chiefly for doves, but a more substantial version may be used for armadillos.

Snakes, poisonous and otherwise, are abundant. When one goes out at night, he may light a cigarette, in jest, "to frighten the serpents," but there is no indication that tobacco is used in capturing snakes, as Sahagún (3: 207) has described for Totonacapan. If one meets a snake on the trail, he cuts a pole with his ever-handy machete and beats the animal to death. Some kill a snake with the machete, using the blunt rather than the sharp edge of the blade. The latter "might lop off the head, which would bite if it hit one." Modesto González would not consider killing a snake with the cutting edge of his machete: "The serpent is unclean, and my machete would be used later to cut sugarcane and other things to eat." A whole series of beliefs is associated with snakes; among

[10] For example, the *tecolote* (No. 34) is thought to be the messenger of the devil, who brings news of illness and death. Because of this, some kill it. But in order to do so, it is necessary to mark a cross on seven shots and to add a bit of garlic (to the barrel of the shotgun?).

other things, it is thought that a weapon is ruined if it is aimed at the snake known as *cuatro narices* (four noses; kanálu·a).

Although hunting is not of the slightest economic significance and now is largely a matter of diversion, it still is surrounded by a good many magical beliefs. A hunter carries no money, knife, matches, or meat with him, and, theoretically, he should avoid women completely for a full day before going hunting. If these restrictions are not observed, he will kill no game, or he will meet with an accident in the *monte*. Any woman—young or

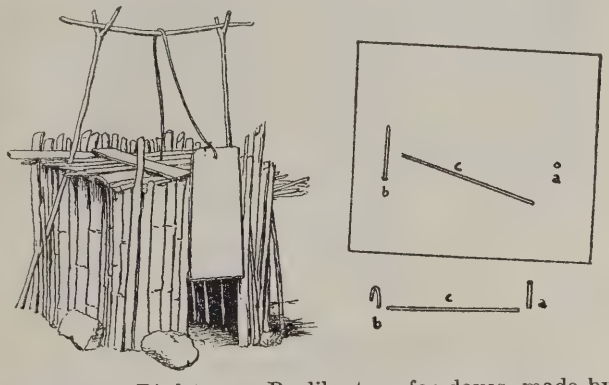


FIGURE 4.—Bird trap. Boxlike trap for doves, made by the stepson of a Sierra Totonac, now resident in Tajín. The trap may be an intrusive type; it is not in general use locally. Walls of the rectangular enclosure (ca. 75×65 cm.) are formed by uprights of odd sticks and split bamboo, secured with liana; the roof is made by laying sticks and bamboo across the top of the walls. The door is a bit of board from an old box, perforated, so that a cord may be attached. The latter is looped over a twig, which is supported by forked poles; the cord passes between the slats of the roof and, inside, presumably is attached to the trigger. Bait is strewn on the ground, within the cage. The trigger arrangement was not set at the time of our visit, but apparently is basically similar to that of figure 3. *a*, A short twig, set upright in the ground, within the enclosure; *b*, a twig bent to form an arch, both ends stuck in the ground; *c*, presumably the trigger, lying loose on the ground. With the release of the trigger, the door drops, imprisoning the birds.

old, virgin or married, menstruating or not, pregnant or otherwise—may touch a gun; but should she step over it, the weapon is ruined (p. 248). The result is precisely the same as that which comes from shooting at the *cuatro narices*, as noted in the preceding paragraph.

Moreover, the forests are the charge of two legendary figures, one male and one female; in order to hunt successfully, their blessing, or at least that of "the old man of the *monte*," is indispensable. To this end, a hunter lights a candle made of the wax of the native bee and offers tobacco to any ancient stone idol he may meet in the

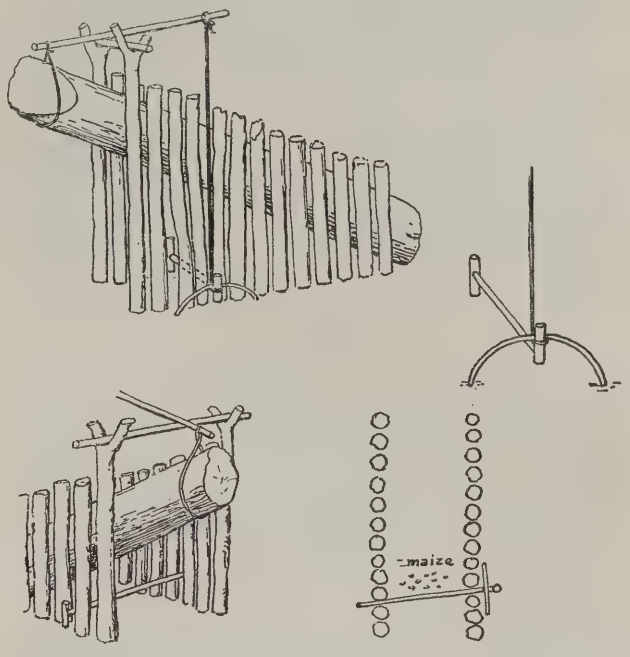


FIGURE 5.—Deadfall. Model of a type used in former times by Miguel Andrés, now deceased; a local resident, but native of the Comalteco area. Two forked posts are planted in the ground and behind, on each side, is set a row of vertical stakes, of progressively diminishing height. A substantial log is placed within the lane outlined by the stakes; the rear end rests on the ground, while the front is raised. The latter is held in position by a cord attached to one end of a light pole, the latter resting across a twig laid in the forks of the front posts. At the other end of the light pole, a liana is tied; it drops to the ground, on the outside of the staked wall, where it is attached to the trigger. In principle, the latter is similar to that of figure 3. Height of forked posts, ca. 80 cm.; length of lane, ca. 60 cm.

forest.[11] If no idol is at hand, the offering is stuck in a tree, and the hunter goes complacently forward.[12]

[11] A similar belief evidently may have been current in the Huasteca, for in Tapia Zenteno (p. 107), one finds the following query: "Quando vas a cazar, o a buscar colmenas, hablas primero, o les das de comer a los Ydolos, que estan en los montes?" Of the Maya, we know that "invocaban al demonio y le quemaban incienso . . ." (Landa, p. 164).

[12] One of our Tajín friends, Antonio Bautista, once went hunting to the west, near the little settlement of Jorge Cerdán. There he found an individual who had a stone idol. He offered to buy it but was told: "No. When I want to eat venison, I light a candle on the ground in front of the idol. Then I go to the *monte* and return with a deer."

One may destroy his companion's luck in hunting by tossing a handful of earth behind him. If the victim realizes what has taken place, he counteracts the evil by rolling a cigar. This he deposits in the notch which he cuts with his machete in a cedar or *zapote chico* tree. "The old man of the *monte*" is said to be inordinately fond of tobacco. and in thanks, he gives the hunter the desired quarry.

Christian saints also are associated with hunting. One informant thinks that a candle should be burned for St. Lazarus. Others believe that St. Eustace is a better bet; "he has his deer." A candle is burned to him and a prayer (*oración*) recited.

### FISHING

Papantla and Tajín are too distant from the Gulf and from large streams for fishing to have been of major importance in aboriginal times. Nevertheless, there is a local tradition to the effect that formerly Papantla was located at the archeological site of "Tuzapan," and that the population moved to the present spot so as to be handier to fishing resources.

The Suma (No. 449) makes no mention of fish, but the sixteenth-century Relación de Papantla states that the Indians "plant and fish in the rivers, by which they support themselves"—thus placing fishing on an equal basis with agriculture. The same document reports the use of both hooks and nets. Undoubtedly, this part of the account refers not to Papantla proper, but to the settlements along the borders and at the mouth of the Río Tecolutla. The port of the latter name was famous for its fish in colonial times, and by 1610, five Spaniards were exploiting its salt and fish resources (Mota y Escobar, p. 233).

Fishing possibilities near Tajín are pretty limited; even so, fishing is popular among the younger men. Some go to the Arroyo de Tlahuanapa, at a point about 2 hours on foot from the *fundo*. Others, especially those who live in the northwesterly parcels, go to the Coatzintla area, in the vicinity of old Troncones, now known as Kilómetro 59. Here there is good fishing in several arroyos which drain to the Río Cazones, and even in the latter itself. Since all waterways are Federal property, it is not necessary to obtain permission to fish, even though the streams run across private lands.

Fishing is most common from April to July, when the water in the arroyos is low. It is advisable, however, to avoid days dedicated to important saints, and anyone who fishes during Holy Week endangers his life. A fisherman may light a candle to St. Raphael, to insure good luck; or he may place a candle on the family altar, designed for any saint who happens to grace the domestic shrine.

Seldom does one fish alone. Four to ten congenial young men take their respective lunches and spend a day at the fishing grounds. Sometimes they are accompanied by their young sons, and the small boys learn through observation and practice. Generally, however, they amuse themselves looking for crustaceans, while their fathers concentrate on larger spoils.

The following fish are found in the arroyos near Tajín:

*a. guapote, huapote* (wapa); "similar to a *mojarra;* all sizes." (Undoubtedly a member of the genus *Cychlasoma*).[13]

*b. guavina, guevina, huabina* (tokošwa, líntin; Totonac names said to be used interchangeably); "long, dark; 8 to 35 cm." (Probably *Philypnus dormitor* or *Eleotris pisonis*).

*c. panzoncito, timpu* (stínpun); "similar to the preceding, but smaller." (*Mollienisia sphenops*).

*d. solote* (šul); "similar to the *guavina,* but larger; horns or whiskers at either side of the head."

*e. churro, trucha* (lakakuyu). (Probably *Agonostoma monticola*).

*f. róbalo* (no Totonac name); "one 40 cm. long is large." (One or more species of the genus *Centropomus*).

*g. sardina, pasandía* (paskóyal, paskóyot); "small, with a striped belly which glistens (*relumbra*)." (*Astyanax fasciatus mexicanus*).

In addition, as a byproduct, fresh-water crustaceans and a shellfish often are collected:

*h. camarón* (iškáqtan). (Probably a shrimp pertaining to the family Palaemonidae).

*i. acamaya* (a fresh-water shrimp of the genus *Macrobrachium*). Four different kinds are mentioned: akáčok, which is large, with stripes on the back; makašíl?, smaller; makasákat, "a very thin one"; and makakíwi, with long antennae. These are considered a delicacy. They are placed alive on the flat baking plate, sprinkled with salt, and eaten at once.

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[13] Informants' comments are in quotation marks. Suggested identifications of fish and crustaceans appear in parentheses and are through the kindness of Mr. Milton J. Lindner. We collected specimens of *c* and *g* which, at Mr. Lindner's request, were determined by Mr. José Alvarez del Villar.

*j. mejillón* (spíyut) apparently is a fresh-water mussel, which is collected occasionally. It seldom is eaten and most of our friends have not sampled it.

Fishing techniques are limited and no use is made of traps, spears, or hooks. Although, under certain circumstances, the Totonac are distressingly handy with the machete, they do not spear fish with it as do the related Tepehua (Starr, p. 265). Today, fishing techniques are limited to the use of two kinds of nets, to poisons, and to the modern innovation of killing the fish by rockets.

There seems to be no generic Totonac term for net. The casting net (*atarraya*, ¢a·l) is popular today, but it is said that formerly a small dip net (pukíl²tai²) (fig. 6) was more common. Other

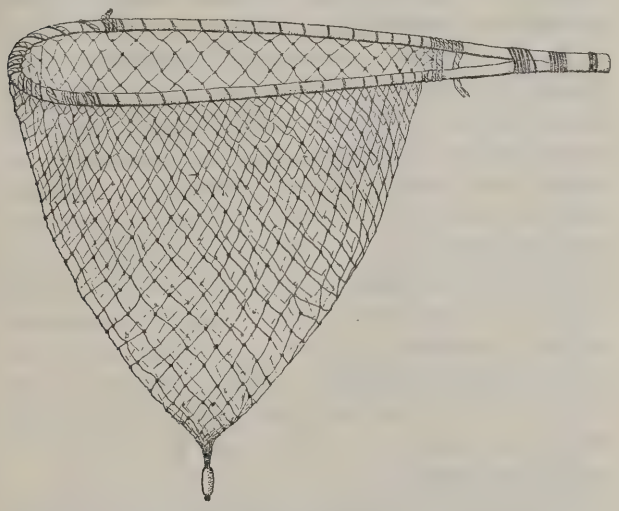

FIGURE 6.—Dip net. Said to have been purchased in Papantla some years ago. Distance from tip of handle to opposite point on frame, 68 cm.

types of nets are not used, although informants describe seines along the Río Tecolutla. In fact, it is said that one Ignacio de la Cruz, an old resident of Tajín, now dead, knew how to make them. He used commercial hemp (*cáñamo*), purchasing both it and the lead weights in Papantla. He made the floats from the wood of the *chaca* (No. 228) or the *cedro* (No. 219); "they were about the size of a tortilla and about 1.5 cm. thick." Presumably his nets were sold outside of Tajín, for seines are impractical in the local arroyos, which are both small and littered.

Today, the dip net is so rare that we saw but one in the community (fig. 6), purchased some years before in Papantla. It is small, conical, with a single lead weight at the apex. The rim is lashed casually, with commercial string, to a bent stick frame.

The casting net generally is bought in Papantla, where various persons, particularly inmates of the jail, manufacture nets which sell from $15.00 to $30.00 pesos. In Tajín, netting seems confined to three men: Tirso Méndez, Miguel Aldama, from Chicontla, near Jopala; and Francisco Villanueva, a local product, who is a jack-of-all trades, known principally as a carpenter and religious singer (*cantor*). Formerly, a local fiber (*pita*, No. 224; cf. Mota y Escobar, p. 233) was used. Now, Don Francisco buys commercial twine; he avoids hemp (*cáñamo*), also available commercially, believing it too absorbent.

A casting net is roughly conical; when open, the rim is circular. The size is measured from the apex to the rim and is expressed in terms of *codos* (elbows), the distance from the tip of the middle finger to the elbow. A small net is of 3 *codos;* a large one, 4 to 5. About the rim of the net is affixed a great number of small, commercial lead weights, purchased in Papantla.

Roberto Williams accompanied a fishing party to an arroyo near Coatzintla; the account below is taken from his notes:

A group of ten left early in the morning, each person carrying a shoulder bag of maguey fiber, which contained food and some old clothing. The party reached the site about 8 o'clock and stopped to eat, taking care to leave half the food for the noon meal. Breakfast past, each fisherman changed to old clothing, clean, but mended. All put on *calzones*, pyjama-like pants of white muslin, and one individual wore an old shirt as well.

The fishermen chose a natural pool, roughly circular, of no great depth, and with virtually no current. Along one side, it was shallow; along the opposite, it was deeper. The pond was cut off completely downstream, by closing the outlet with the casting nets. They were arranged adjacent to one another, held upright by a series of sticks imbedded in the floor of the stream.

The men started in the shallow part of the pool, where there were many aquatic plants. Forming a line, they moved from the center of the pond toward the edge, pushing the plants and refuse in advance. As they went, they removed broken lengths of bamboo from the bottom of the pool, checking each to see if it contained fish or shrimps. Upon reaching the bank, they looked further for fish, among the vegetation along the edges of the pool. Once this section of the pond was thoroughly inspected and freed of rubbish, the whole accumulation of plants and sticks was dragged to the outlet, where the nets were set up, and arranged there as reinforcement. The cleaning of the pool (called sweeping) continued until there was no

rubbish, at which time the nets were removed from their temporary position and subsequently were used as throwing nets.

Casting is described as follows:

One end of a retrieving cord is attached to the apex of the net; its other terminates in a loop, which is slipped over the left wrist. The cord is doubled a couple of times and is held in the left hand, which also clutches the rim of the net. One of the lead weights is caught in the mouth; the right arm is passed beneath the net and the rim of the latter is grasped in the right hand. Finally, with the right arm, the net is thrown outward, in such manner that it falls open on the water, a meter or more from the fisherman. With the weight of the small leads, the net sinks and closes, imprisoning the fish which happen to be beneath it.

Today, fish poison is little used, and then "far from the houses." Nevertheless, Modesto González lists five uncultivated plants which are effective:

*a. Camote amarillo* (*Dioscorea*, No. 109). Its tuber is scraped or ground, then tossed into the water.

*b. Camote blanco* (*Dioscorea*, No. 147); use apparently the same as the preceding.

*c.* Spanish name unknown; in Totonac, laqašmâiyak (*Serjania*, No. 199). A vine, whose stem is hacked in pieces, 20 to 25 cm. long; these then are cracked with a heavy stick and tossed into the arroyo. The poison is said to have no effect on humans.

*d. Bejuco de chile* (*Salmea*, No. 49). The vine is cut in short lengths and thrown into the water. Again, not injurious to humans.

*e. Palo de leche* (*Sebastiana*, No. 99). The bark is slashed and the milky fluid which exudes is collected and dumped into the stream. Great care is taken, for this liquid is extremely irritating to the eyes; it is said, in fact, to attack the sight of the fish.

Unlike the other poisons, Don Modesto thinks that this one might be used to dispatch humans. He has heard that "when one is angry and wants to die," he gathers the milk of this tree. However, neither he nor other informants can give a specific case of suicide by this means.

Fishing luck must vary widely, but we know of one group of four which caught, between them, 87 *guapotes* and 1 *guavina*, and collected, as well, 3 shrimp. If the catch always were this numerous, fish might provide an important protein element in Totonac diet. But our impression is that its role is definitely minor—even though, as a special delicacy, dry fish occasionally is purchased in the Papantla market.

There is no fixed rule for the division of the catch. Antonio Bautista says that he and his friends put the fish in maguey fiber bags; when one bag is full, they use another. At the end of the day, they divide the largest fish equally among all participants; next, the smaller fish. The man who has had outstanding success generally gets a bit more than the others. Mauro Pérez and his friends likewise divide the catch equally. But Francisco Morales and his companions proceed differently: each one keeps what he catches personally; if he bags only one shrimp, that is his haul for the day. Lorenzo Xochigua once went with a party which was to fish by rocket. One man stood on the bank and tossed the rocket—but he came away empty-handed, for "his companions grabbed the fish so rapidly that none was left for him."

One with a cowlick at the back of his head invariably is a good fisherman and is invited frequently to accompany fishing parties. If a fisherman notices that one of his companions is blessed with such a cowlick, he attempts to tie his own little finger, unobserved, so that he too may share the luck. If several are fishing and only one seems to be successful, the others may examine him for a cowlick. If they find one at the back of his head, they tie his little finger with a vine or with the antenna of a shrimp, to destroy his luck. Outnumbered by his companions, he is obliged to submit. Lads new to fishing may be deceived. They allow their companions to tie their thumbs or little fingers in the belief that this move will bring good luck; on the contrary, the result is quite the opposite.

No fisherman will have luck—cowlick or not—if he carries with him a mirror, money, or a knife. However, he may bury these articles in the bank of the arroyo; or he may cover them with sand and wrap them in leaves. Thus enclosed, they may be carried in the shoulder bag without ill effect.

When one hopes that a rival may have poor luck, he goes ahead and tosses poison in the stream, so that the latecomer will find the fish already dead. Or he wears a ring—evidently the equivalent of tying his finger—and the other is unable to catch anything. Another alternative is to make the sign of the cross in the air, with the machete, along the road where the competitor is to pass; or, unobserved, to toss a fistful of sand on the shoulder of the rival. All these measures guarantee poor luck in fishing.

Attention also centers upon the net. Some tie the "teeth" of the shrimp to it, to insure a large

catch. A new net often has a godfather (*padrino*), and generally he, not the owner, casts it the first time. Upon this occasion, an offering of food is tossed into the stream so that the legendary "owner of the water" (*el dueño del agua*) may grant luck in fishing. A concrete case witnessed by Roberto Williams follows:

The owner of the new net removed from his shoulder bag a cornhusk, in which were wrapped: six wild miniature tomatoes, two chilis, a head of garlic, a small onion, and some leaves of *epazote* (No. 75). Generally squash seed (*pipián*) also is included.

The owner of the net threw away the husk wrapping, gathered some dry leaves from the edge of the stream and, clutching this assortment, entered the water. He was accompanied by the godfather, who carried the net. The two men stood about 2 m. apart. The owner tossed his miscellaneous offering into the water, a meter in front of the godfather. When it had sunk, the *padrino* threw the new net over the same spot. He cast several times before turning the net over to the owner. Generally, the godfather is given half of the first catch.

The owner of the net filled his mouth with water and blew a bit into the mouths of the first fish caught—to hasten their death, it is said. A meticulous fisherman performs this act with each fish he catches, regardless of whether or not the net is new. Some blow water into the mouths of the first fish of each catch; others make no such gesture.

A net may be "cured" on dry land, before the actual fishing excursion. The account of a local fishing enthusiast follows:

With my first casting net, I did not "cure" it, but with my second, I did. My uncle asked when I was going to use the net for the first time, and I told him the following Sunday. He answered, "Then it must be cured, so that it will always catch fish. I shall cure it."

My uncle went away, but came back later with a handful of squash seed (*pipián*), with seven chilis, and seven cloves of garlic. We went to the patio of the house and my uncle told me, "Stand as though you were in the arroyo and cast your net." He stood to one side, while I did as he told me. The moment I threw the net, he tossed the food from his hand in such a way that some of it caught in the net. I cleared the net, removing the squash seeds. Then my uncle told me that the chili and garlic were to protect the net from *mal viento* (literally, evil air; evil forces). And, "just as your net caught the squash seeds, so it will catch fish," he said.

## WILD PLANTS

The Totonac make considerable use of their wild plant resources, in part for food, in part for other purposes. We collected between 300 and 400 herbarium specimens, about a fourth of which are considered curative—either because of medicinal or magical properties.

### TOMATO AND CHILI

Of all the wild plant products, the two most important economically are the small tomato (*tomate*, *Lycopersicon*, No. 24) and the chili (*Capsicum*, No. 214). Both are of direct interest to every Totonac household, for they are used extensively in cooking and, moreover, are sold to considerable advantage by many families. These two plants appear in great quantity as volunteers in the maize fields. Some Totonac claim that they are not interested in adopting the plow, because it might endanger these two precious crops; and this may not be entirely a matter of rationalization.

The tomato is the miniature red form, about the size and shape of a marble; the small yellow type is unknown. There are two crops annually. The first begins in February and continues into April, when the maize starts to tassel; then "the yellow powder which falls from the corn is so strong that it dries the other plants in the field." However, once the ears of corn begin to form, the tomato sprouts anew, and by July is bearing again, ceasing once more in September.

The importance of the tomato as a local source of vitamins can scarcely be overestimated. Moreover, it brings a welcome cash income to those who have time and energy to gather the fruit. Many women, especially the elderly and the needy, collect every few days during the indicated seasons. Some of the fruit is sold in Tajín—to housewives who have no time to go to the fields; to those whose fields are too distant; or to those who are relatively prosperous. However, the bulk of the *tomates* is marketed in Papantla. The gatherers make frequent trips to town, each carrying on her head a wooden tray filled with the fruit. The wild tomato sells readily in Papantla because it has an excellent flavor and is much cheaper than the large, cultivated, commercial tomato shipped in for sale.

It is difficult to calculate either yield or proceeds from the wild tomato, because the fruit is collected in small quantities as it ripens, over a period of several weeks. Of our 35 families, 2 do not plant corn, hence have no field in which to collect; 2 claim not to gather the *tomate;* 14 collect for personal consumption; and 17 sell, in

varying quantity. Most do not sell systematically, but collect the fruit each time they contemplate a trip to Papantla. However, Pablo González, whose wife and stepdaughters exploit the *tomate* very thoroughly, calculates that a maize field of 1 hectare produces 1.5 *almudes* (18 liters) of tomatoes a week, during the spring season of 3 months. He did not state whether or not the second harvest was equally plentiful, but he estimates a total annual income of over $300 pesos from the sales made by the women folk of his family. Don Pablo, incidentally, plants 3 hectares to corn, hence the household has more than average terrain from which to collect.

Others sell on much smaller scale and few have any notion of their total returns—especially since the price varies, according to supply and demand, from $0.60 to about $3.00 pesos the *almud* of 12 liters. Some say loftily that they sell only when the price exceeds $2.00 pesos. It is clear from the figures given by Don Pablo that a good many families could add materially to their annual budget if they were to exploit the wild tomato more systematically. Not all, of course, are in a position to do so. Those who have no maize field have no place to collect; and a woman who must care for assorted small children is not able to leave them sufficient time to go to Papantla to sell.

Some dry the *tomate* for their own use out of season. A frame of four forked sticks supports two crosspieces, on which rest a series of horizontal saplings or split bamboos, and on these, the fruit is spread to dry. A small fire may be built beneath the frame, to give added heat and to reduce the humidity.

The chili also is a miniature form, but extraordinarily potent. It is collected but once a year, beginning in April and continuing into May. Fresh or dried, it is one of the mainstays of the Totonac cuisine, and economically, it probably outranks the wild tomato in importance.

Concerning the exploitation of the wild chili, we have data from the same 35 families. Of them, 2 do not plant maize, hence have no cornfield and no source of supply; 8 claim not to gather the chili; 5 collect sufficient for home consumption; 15 gather, in addition, a surplus for sale. Since the chili generally is sold dry—at one fell swoop, and not piecemeal, as is the tomato—families are able to calculate proceeds more easily. Most sales range from $12 to $90 pesos the year.

However, one family claims to have realized $143 pesos, and two give figures in the vicinity of $600 pesos annually. One of the latter households is that of Pablo González, which is blessed with numerous offspring, including three grown stepdaughters. This family plants 3 hectares of maize and has a sizable territory from which to collect chili. The other case is quite different, for the family is in straitened circumstances. The man of the household is ailing and unable to work, but his elderly wife and decrepit godmother collect about 5 *fanegas* (720 liters) of chili between them, and claim to sell it at $10.00 pesos the *almud* of 12 liters.

In both the above cases, the price must be better than average to account for the alleged proceeds. Ordinarily, chili is sold from $4.00 to $10.00 pesos the *almud*, and $5.00 to $6.00 pesos is usual. In any event, it is clear that at least two families gain a considerable sum from the collection of wild chili, and others probably could increase their earnings through more systematic collection.

Chili is dried in the sun, and sometimes on a special frame such as that described above for the tomato. During rainy weather, the rack may be set up inside the dwelling.

As a general thing, women gather and sell both wild tomato and chili. However, when the latter is collected on sufficiently large scale so that it is marketed by the *fanega* (144 liters), the vendor generally is the man of the family.

### OTHER WILD FOOD PLANTS

A limited amount of food comes from other wild plants. Some are eaten as greens (Nos. 5, 6, 29, 93, 104, 105, 286); others are used to make fermented beverages (Nos. 21, 252, 283). Of some, the pods or their contents are considered a delicacy by the youngsters (Nos. 38, 181, 203); and the seeds of another (No. 249) provide a vegetable oil.

Two fruits are collected in sufficient quantity to warrant marketing in Papantla. One is the *zapote cabello* (*Licania*, No. 90), produced by a tree of *monte alto*, which also is a semidomesticate, being planted occasionally in the maize field or in the patio of the house. The fruit is popular in Papantla; it ripens in November, hence is available

for the brisk trade which accompanies the celebration of All Souls' Day.

Even more important is the *zapote chico* (*Achras*, No. 191), which grows either in *monte alto* or *monte bajo* and seems never to be planted deliberately. When young, it is said to bear in August; but if 25 or 30 years old, it produces fruit as early as April. As a rule, the fruit is cut green and is ripened artificially. A hole is dug and cornhusks burned in it. The fruit is placed in the pit, cold ash added, and the whole well covered. If the vendor is in a great rush to sell his wares, he may light a fire on top to speed ripening. Generally, both the *zapote cabello* and the *zapote chico* are sold by elderly women who are in need of supplementing their slim resources.

Other wild fruits are less exploited (pp. 162–163). A few (Nos. 37, 85, 315) are collected and occasionally are sold on very reduced scale—by the cupful, for example. Others (Nos. 10, 18, 21, 41, 51, 52, 57, 106, 156, 162, 163, 186, 187, 198, 207, 208, 218, 221, 283, 327) are gathered occasionally; children and adults nibble on them, but they are not a major item in the diet. Most fruits are eaten fresh, although some (Nos. 79, 98, 124, 172) seem invariably to be made into a preserve.

### CHICLE AND RUBBER

The utility of wild plants is not limited to medicines and foods, and the *zapote chico* (No. 191) produces chicle, as well as fruit. A tree must be about 10 years old before it is tapped. Generally this takes place in the fall. Several men may decide to collect chicle; if they tap trees other than their own, they arrange the price with the owner in advance. Not every owner is interested, because if the tree is cut carelessly, it may die. However, if the operation is performed correctly, no evident damage results, and the yield of fruit continues as usual.

Starting at the base of the trunk, a series of diagonal, intersecting incisions (fig. 7) is cut with the machete. Virtually every *zapote chico* in Tajín has a ladder-work of scars, in the form of a giant featherstitch, running up the lower trunk. In the first, or lowest cut, a stiff leaf is placed, to serve as a canal. This may be the pulpy leaf of one of the bromelias (No. 301) or of an unidentified plant called λapatíe. Through this channel, the dribble of latex is carried to a bamboo on the ground. The bamboo is left at the foot of the tree for 4 days, at the end of which the latex is collected. To it is added the "milk" of the *ébano* (No. 152), *ábalo* (No. 349), or one of the figs (No. 221). The resulting mixture is boiled and poured into molds "as though it were brown sugar." The cakes are allowed to set and then are sold to stores in Papantla.

Chicle is not of major economic significance to the community, but, from time to time, individuals benefit from its sale. Of 39 families, only 3 have

FIGURE 7.—*Zapote chico* tree tapped for chicle.

sold chicle; 1 derived $10 pesos, but the 2 others claim to have realized $400 and $540 pesos, respectively.

Rubber (*hule*, No. 345) is even less exploited. It is not cultivated in Tajín, although there are a number of trees, especially on the lands of Porfirio Morales and Arnulfo García. One informant has heard that rubber can be planted "when the fruits are ripe."

If one happens to have a tree, he taps it, and the proceeds come as a pleasant windfall. Of the same 39 families, only one derived income from rubber, and the total proceeds were $12 pesos. Tapping may take place at the end of 5 years, but

"only in May, when the tree is leafless; otherwise, the latex will not run." A tree tapped for the first time is said to be cut spirally, starting well up the trunk and proceeding downward. However, on subsequent occasions, incisions are made in the form of a V. A bamboo at the base of the tree conducts the latex to a container.

Coagulation[14] takes place in a clay pot, without heating. The stem of a vine (No. 358) is cut in short pieces and crushed. Together with water, the pulp is added to the latex, whereupon the latter is said to coagulate. In this form, rubber is sold in Papantla at $40.00 to $45.00 pesos a "tin," which is a 5-gallon alcohol container. One tree generally produces about half a tin.

The general verdict is that "here we do nothing with rubber." Nevertheless, the Mexican rubber tree evidently grows in Tajín, without much encouragement or care, and it is not impossible that small-scale planting of commercial rubber (which, botanically, is quite distinct from the local tree) might profitably be incorporated into Totonac economy. It might relieve, in part, the dependence upon vanilla, whose yield is highly variable, and whose market price likewise fluctuates, but often is pegged so low by Papantla buyers that there is little profit in planting. Moreover, the vanilla crop fails not infrequently, owing to spring drought. In such a case, the only major cash crop on which the Totonac can depend is their sugarcane. The addition of rubber, if feasible, would make for a more diversified and more stable economy.

At present, there is widespread interest in establishing a permanent rubber industry in Mexico, and the Federal government is providing *ejido* communities farther south with disease-resistant clomes of the commercial rubber tree. The extension of the program to Tajín might be worthy of consideration. At least, it could do no harm to have local possibilities surveyed and, if they seem favorable, arrange for a small experimental planting.

## ANIMAL HUSBANDRY

Livestock is limited. There is no head of cattle of any description in the entire community of Tajín, and there are no sheep and no goats. But more than half the families, not always the most prosperous, have a riding animal; and many have a pig or two. Fowl and bees are prominent in local economy.

The absence of cattle is noteworthy, for Tlahuanapa, the agrarian community which adjoins Tajín on the southeast, is said to have a fair dairy industry, and the Papantla zone in general is considered good cattle country. As a matter of fact, about 15 years ago, there were a few milk cows in Tajín. Josefina García is said to have had close to a dozen. Although there was no demand for the milk, it was possible to sell a certain amount of cheese. However, two of her cows died from snake bite; another, from some undefined illness. The remaining animals were sold, and since that time there have been no cattle in Tajín. For this, various reasons are given. Santiago Simbrón thinks there is not sufficient water during the spring. Doña Josefina herself says that cattle result in complications with one's neighbors. Since it is not customary to fence fields, livestock is likely to wander into the milpa—and complaints, bickerings, and damages result without fail.

### DONKEYS, HORSES, MULES

The consensus of opinion is uniform: as between the donkey, horse, and mule, the mule is by far the most satisfactory, as well as the most expensive to purchase.

The donkey (*burro*) is of limited utility. It serves to haul cane from the field to the mill; it is useful in transporting firewood; and it can serve as a mount. But it mires in deep mud, hence during much of the year is of relatively little use, either for cargo or for riding.

The horse is considered a luxury item, since it is used principally for riding and has far less resistance than a mule. Some pack cargo on their horses—but they are not first-class animals in the first place, and in the second, they do not improve with such use.

A horse, not in its prime, costs around $200 pesos. At that price, Santiago Simbrón sold his, and at the same price, he bought another, of about the same category. A really good mount runs between $350 and $400 pesos—which few families can afford to invest in an animal which does little but transport its owner in style to Papantla of a Sun-

[14] In the midnineteenth century, Bausa (p. 404) reports the use in Papantla of the liana *sarnoso* to coagulate rubber; this presumably is our No. 305.

day. Horses are not named, but some receive rather surprising consideration. We were told by Rutilio Olmos that if we wished to borrow his beast, we should request it a week in advance, "so that the horse might know where it was going."

A good mule is equally useful as a mount and as a beast of burden. It pushes effectively through the mud; it is able to carry heavy loads; and when hitched to the sugar mill, it is more efficient than a horse. Thirty years is considered the average life of a good mule, although Francisco Xochigua had one which allegedly endured 38 years. This extraordinary longevity is attributed to the fact that the animal was not laden until it was 4 years old.

A good mule represents a considerable capital investment. One broken costs between $600 and $800 pesos; not broken, about half that price, but an additional $100 pesos must be paid someone in Papantla who will train the animal. A mule may be ruined in the breaking; it may become timid and skittish or it may become "mean." Accordingly, it is a great gamble to buy an unbroken mule. The Totonac are aware that it is false economy, yet because of the reduced cost, it is more popular to take a chance on an unbroken animal.

On the whole, those who own burros are reconciled to them, simply because they cannot afford a more expensive animal; most of those who have horses would prefer mules, were it not for the high initial cost; with few exceptions, the horses are not prepossessing. Generally, those who have mules are of better than average means.

Animals are surprisingly plentiful and indicate that the Tajín Totonac are prosperous when compared to other indigenous groups in Mexico. Probably the average is nearly one animal per family. Our count does not include all households in the community, but we have information from 44, of which 34 live in the *fundo legal*. It cannot be said flatly that the group is entirely representative, although we believe it to be; certainly, it includes some of the most prosperous, as well as some of the most poverty-stricken families of the community. For convenience in reference, the households have been numbered.

Of the total of 44 households, 18 have neither riding nor draft animal; with this group is one family (No. 12) generally considered affluent. Among the remaining 26 households, animals are distributed as follows:

| Family No.: | *Burros* | *Horses* | *Mules* | *Total animals* |
|---|---|---|---|---|
| 1 | 0 | 1 | 0 | 1 |
| 2 | 0 | 0 | 2 | 2 |
| 3 | 0 | 1 | 0 | 1 |
| 4 | 0 | 0 | 1 | 1 |
| 6 | 1 | 1 | 1 | 3 |
| 9 | 1 | 0 | 0 | 1 |
| 11 | 1 | 2 | 0 | 3 |
| 14 | 0 | 0 | 1 | 1 |
| 17 | 1 | 2 | 0 | 3 |
| 19 | 0 | 2 | 0 | 2 |
| 21 | 0 | 1 | 0 | 1 |
| 23 | 3 | 0 | 0 | 3 |
| 24 | 0 | 0 | 1 | 1 |
| 25 | 0 | 1 | 1 | 2 |
| 27 | 0 | 2 | 1 | 3 |
| 28 | 0 | 1 | 0 | 1 |
| 29 | 0 | 1 | 0 | 1 |
| 31 | 1 | 0 | 0 | 1 |
| 33 | 0 | 1 | 0 | 1 |
| 35 | 1 | 0 | 0 | 1 |
| 36 | 0 | 1 | 0 | 1 |
| 37 | 0 | 0 | 1 | 1 |
| 39 | 0 | 0 | 1 | 1 |
| 41 | 0 | 2 | 2 | 4 |
| 43 | 0 | 1 | 0 | 1 |
| 44 | 0 | 1 | 0 | 1 |
| Total | 9 | 21 | 12 | 42 |

Of these 26 families, 17 have 1 beast each; but 3 families have 2; 5 have 3; and 1 has 4. Of the households with multiple animals, three (Nos. 6, 11, 25) run local stores and use their beasts to transport merchandise. One family (No. 23), close to indigent, has three burros temporarily. Originally, it owned a female donkey, which produced two offspring. Since our count was taken, one of the progeny has been sold and the other given to a son-in-law in Ojital, so that the family again is reduced to one beast.

There is virtually no local breeding of animals. From time to time, they are sold locally in Tajín, or exchanges are arranged between individual owners. Most purchases, however, are made from dealers who come from Papantla. These vendors accept both cash and produce, such as timber, maize, vanilla, pigs, and turkeys; they also receive other draft or riding animals as part payment.

In Tajín, animals require a minimum of care. Generally, they are tethered beneath a tree, near the house. A few families have a corral of sorts which consists of an enclosure fenced by vertical posts, the latter connected by horizontal bars.

The initial cost of a riding or draft animal is the principal one, and maintenance is slight. Animals may be taken to an abandoned maize field to pasture, or fodder is cut and brought home daily. The owner himself may return from his milpa with greens for the animal, or the chore may be assigned a half-grown boy of the household. In season, green maize stalks and leaves sometimes are given the beasts. The dry tassel is cut for them, but the dry plant never is fed animals in Tajín, as in other parts of Mexico, presumably because green vegetation is abundant throughout the year.

Many plants are considered suitable for fodder, but our impression is that four are most popular: *ramón*, *ojite*, and two cultivated grasses, *zacate paral* and *zacate guinea* (Appendix C, Nos. 79, 98, 243, 245, respectively). It is said that in nearby Gildardo Muñoz, few Totonac bother to bring fodder to their animals; instead, they tether them along the "road," where there is a considerable fringe of grassland.

In food consumption, there is no distinction between donkeys, horses, and mules. Some animals are maintained exclusively on green fodder; others are fed maize in varying quantities. Below is a summary of the data provided by 20 of the 26 families which own animals. In *c–h*, the reckoning is in terms of liters daily for each animal. Where we have converted, for the sake of uniformity, the informants' statements follow, in quotation marks.

| | *Number of families* |
|---|---|
| *a.* Exclusively green fodder; no corn whatsoever | 5 |
| *b.* Generally green fodder; corn occasionally, infrequently | 3 |
| *c.* Estimate: ca. 0.28–0.36 liters of corn daily ("5 liters every two weeks"; and "1 liter twice a week") | 2 |
| *d.* Estimate: ca. 0.75 liters of corn daily ("3 liters daily, among 4 animals") | 1 |
| *e.* Estimate: 1 liter daily ("2 liters every other day") | 1 |
| *f.* Estimate: ca. 1.5 liters daily ("3 liters to each animal, 3 to 4 times a week"; and "3 liters every 2 days") | 2 |
| *g.* 2 liters daily, per animal | 1 |
| *h.* 3 liters daily, per animal | 5 |

It is evident from the foregoing that a good many families spend virtually no maize on their riding and draft animals. Some, when asked, reply that animals are given corn if there is any to spare; if not, they do very well on green fodder. Under the circumstances, the only drain on a family of poor means is the bother of cutting forage.

Nor do the Totonac spend much on trappings for their animals. Old gunny sacks serve as sweat blankets. Saddles, purchased in Papantla, usually give years of service and are generously reinforced with odd bits of wire, rope, and string for many years before they are discarded. Needless to say, the high humidity does not contribute to the preservation of leather. The pack saddle is not distinctive; here, as in many parts of Mexico, it is a simple wooden frame, which consists of an X-shaped piece, fore and aft, connected by a longitudinal strip on the lower half of either side.

Riding and draft animals are relatively plentiful in Tajín, yet they are not an integral part of the culture, and the latter is literally pedestrian. Most people travel on foot, although to ride a horse or a mule undoubtedly gives one a certain prestige and personal satisfaction. Without exception, women do not ride. Often the head of the family goes to Papantla, proudly astride his best mount, while his wife and daughters accompany him on foot.

Agriculture is essentially independent of draft animals, for the plow and the cart are not used. However, beasts of burden haul produce to Papantla for sale. And animals are used in connection with (the post-Conquest) cane growing—both to haul the cut cane from the field to the mill, and to provide traction for the latter.

There is no one in Tajín who can shoe a horse; it is necessary to go to Papantla for such service. There are no muleteers in the entire community and extremely few Totonac who can load an animal expertly. Moreover, there are few dashing riders, and perhaps the chief requisite of a mount is that he be able to bring his master, in an advanced state of intoxication, back to home base in Tajín, following a Sunday in Papantla. Finally, there is virtually no veterinary lore connected with riding and draft animals.[15]

[15] One remedy is prepared for animals which suffer from *torzón* (intestinal and urinary stoppage). A plant called *epazote de la mula* (Appendix C, No. 74) is boiled; the resulting liquid is put in a bottle from which the beast is forced to drink.

A horse that stumbles chronically is burned with a hot iron at the base of each ear. One whose feet interfere similarly is burned on each of the upper back legs.

The horse of Rutilio Olmos either wandered from home or was stolen. When finally it was found, it had a dislocated foot. The owner tried massage ineffectually, but confessed that his hope was that the animal "might cure itself alone."

## SWINE

Hog raising is a greater drain on the maize supply, and fewer families have swine than have riding and pack animals; moreover, the number per capita is considerably less. Our information comes from 40 of the 44 families mentioned above. Of them, 21 have no swine; among the remaining 19, hogs are distributed as follows:

| Family No: | *Number of pigs* | *Pigpen* |
|---|---|---|
| 1 | [1] 6 | × |
| 2 | 1 | × |
| 3 | 1 | × |
| 5 | 1 | ------- |
| 9 | 2 | ------- |
| 11 | 2 | [2] × |
| 16 | 1 | ------- |
| 19 | 1 | ------- |
| 21 | 1 | × |
| 22 | [3] 1 | [4] |
| 27 | 1 | ------- |
| 30 | [5] 1 | ------- |
| 31 | 1 | ------- |
| 33 | 2 | × |
| 34 | 1 | × |
| 36 | 2 | ------- |
| 39 | 2 | × |
| 41 | 2 | × |
| 44 | 2 | ------- |
| Total | 31 | |

[1] 3 sows, 3 small ones.
[2] 2 pigpens.
[3] Small, a recent gift.
[4] No pigpen as such; the hog is kept in the granary.
[5] Small.

Three kinds of pigs are known to the Totonac: (*a*) cuinos (makłtintilí pašni ?, bald pig), of which there is none in Tajín; (*b*) *cochinos grandes* (lanqa ? pašni ?, large pig), the most frequent in Tajín; and (*c*) *polinche*, another large form, said to yield "the most lard of all. There once was one predominantly of this breed in Tajín, but even it was of mixed blood."

Although pigs are not treated with any evident affection, in at least one household they attain the dignity of personal names. One little female porker is called La Guaracha (the leather sandal), and a young male is known as Juan Charrasqueado (the name of a current popular song).

There is a certain amount of local breeding of swine—assuredly more than of horses. The owner of a sow arranges to take her to the boar. To the owner of the latter, either he pays $5.00 pesos or promises him the first choice among the progeny. It is considered "more convenient" to pay the $5.00 pesos and thus avoid a dispute later.

A sow is given maize gruel, with lard, to stimulate the flow of milk; if, by any chance, her supply fails, the offspring are reared on maize gruel. For the first 8 days after birth, the pigs suckle. Then they begin to look for plants, and at 2 weeks, they are able to eat corn.

Swine run free most of the time; "that is the way they become fat, by walking around." However, if the owner's fields are adjacent, the pigs are tethered. Sometimes they burrow and make a shelter of sorts for themselves along the edge of the house clearing. When there are two or more, a special pen and shelter generally are built, and irrespective of number, some sort of protection is necessary during the heavy summer rains. If the household boasts only one pig, it may sleep in a corner of the family dwelling. Ordinarily, a sow with young is kept in an enclosure. Once the little ones begin to put on weight they are released; by this time, they have little tendency to wander very far; "they think only of eating."

At the time of our count, about half the families with pigs had special shelters (*chiqueros*) for them; one (No. 11), in fact, had two. These belong to one of the local storekeepers; although at the moment he had only two pigs, ordinarily he maintains more. The pigpen usually is a small gabled building with walls of bamboo and roof of thatch (pl. 17, *e*) (p. 203).

It is difficult to estimate the cost of maintaining a pig. In the first place, food consumption varies greatly, according to the size of the animal. In the second place, although the principal food is maize, supplementary foods vary considerably in quantity, from family to family. All pigs forage, but some have better opportunities than others.

Unfortunately, there is no equivalent of the green fodder on which riding and cargo animals subsist, and little greenery is cut for the pigs. Sometimes the vine of the *calabaza* (Appendix C, No. 273) grows out of bounds and is believed to keep the maize from developing properly; accordingly, parts of it are pulled out and fed green to the hogs. An overluxuriant sweetpotato vine (Appendix C, No. 260) also may be cut and brought home to them. Kitchen refuse is relatively slight. Left-over tortillas, when there are any, are given the pigs. Green beans are shelled, for the seed alone is considered fit for human consumption; the remainder of the bean is boiled and

fed to the swine. Bananas and *calabazas* also are given them, "when there are any to spare."

Owing to the differences in food requirements and in the variability of the nonmaize feeding, it is pretty hard to say just how much corn is given a pig. A small one may eat as little as half a liter a day; a larger one, between 1.5 and 3 liters. But a hog which is being fattened is given about 6 liters daily—eight times the average daily consumption of an adult human being in Tajín. Not all maize is equally good for a swine. Some raise yellow corn especially for fattening pigs. However, Ana Méndez reports that her little porker developed diarrhea when she gave it to him; she also claims that a hog which eats a certain kind of red maize (iłkón) never will fatten. She relies exclusively on white corn.

When a pig is to be fattened, it is given salt water daily, or in its stead, *tequesquite*, an alkali, collected on the shores of dry lakes, and sold in Papantla. "A good pig" is fattened in 8 months; "a lazy one" requires a full year.

At least one resident of Tajín, Magdaleno Méndez, is able to castrate. For a female, he charges $1.50 pesos; for a male, $1.00. The operation must be performed either when the moon is full or when it is new. The cut is made with a sharp knife, then is sewn with needle and thread, and rubbed with ash. Sometimes flies lay their eggs in the wound, and these are killed by applying the "milk" from a tree described as similar to one of the figs (Appendix C, No. 222). Following castration, the animal is tethered. If, after 4 days, the wound has healed, the pig is released. It is fed leaves of the sweetpotato vine to stimulate appetite, and shortly thereafter, begins to eat "everything."

Hogs are not inexpensive; a young one costs from $30 to $50 pesos; a large one, several hundred. They are purchased in Tajín or in Papantla. A Totonac who sells a pig often cuts the tip of the tail and sticks it for safekeeping between the upright poles which form the wall of the house, so that "the breed may not terminate."

Other than fowl, pork is the only meat which is available with any frequency. A medium-sized animal, still not sufficiently fat for the market, may be killed for home consumption. Quite often, well-fattened pigs are butchered locally; the owner circulates among neighboring families, taking orders days in advance, to be sure that none of the meat will be left on his hands.

To slaughter a pig, two men are necessary, but generally there is a sizable gathering of interested male relatives. Since the whole business is within the family, there is no question of payment. Slaughter takes place before dawn. The front feet of the animal are tied together first; the same cord is passed to the rear feet, which then are tied. The hog is placed on its left side, with its head over the edge of a pit which has been dug in the ground. One of the men sits astride the animal and thrusts a knife into the neck, in such manner that the tip reaches the heart. The blood is caught in a vessel which is placed in the pit.

Immediately thereafter, the carcass is shoved over the pit, being supported on a series of poles. And within the hole, a rapid fire of paper and dry cornhusks is lighted. In this quick blaze, the hog is thoroughly singed. It is not treated with hot water, although this is known to be the practice about Tuxpan. Next, the carcass is lifted to a table, where the skin is well washed and scraped. A ventral cut is made and the internal organs removed. The inner side of the legs are slit and the skin is peeled off, together with the adhering fat. Once stripped of its cushion of fat and of its skin, the carcass is butchered; by early morning, meat is ready for sale.

Certain cuts are recognized: legs, ribs, and spine. Those who buy in considerably quantity may take such a cut; but others, who want less meat, purchase somewhat amorphous hunks. All meat is sold at two standard rates; with bone, at $3.00 pesos the kilogram; and without bone, at $4.00 or $4.50 pesos—slightly less than current Papantla prices.

The fat is separated from the skin; the latter is cut in strips; the fat, in small squares. Both, together with water and salt, are boiled in a large copper vat (*paila*). Not every copper vessel will serve, only one whose interior has a tin wash; otherwise the flavor is disagreeable. A few households have a special copper container destined exclusively for the preparation of lard. This is loaned free of charge to relatives, but an outsider generally pays $2.50 pesos. Lard sells at about $5.00 pesos the kilogram; again, slightly less than the Papantla price. Certain individuals have special skill in preparing cracklings "that are neither

too greasy nor too dry." Some hours after the meat has been sold, cracklings are ready, and the demand generally exceeds the supply.

The large intestine, well scraped and washed with lime (*cal*) and lime (*limón*) juice, is used to make blood sausage. The small intestines are fed to the dogs.

### FOWL

Since early times, poultry apparently has been important among the Totonac. In 1580, both turkeys (*gallinas de la tierra*) and chickens (*gallinas de Castilla*) were abundant in the Totonac pueblo of Tlacolulan, near Jalapa (Paso y Troncoso 5:109). As early as 1579, the raising of fowl was significant economically in the Totonac pueblo of Misantla, and turkeys and chickens were sold in Veracruz, 20 leagues distant. It is said that no matter how poor an Indian, each year he raised more than 40 fowl (Relación de Misantla). Poultry also was an important article of commerce in Papantla in the late sixteenth century (Relación de Papantla).

Today, virtually every household has either chickens or chickens and turkeys; few have ducks or pigeons. The duck is of interest since it appears to be the Muscovy type, hence an aboriginal domesticate.

Chickens and turkeys are important economically because of their food and their sale value. Socially, they are significant inasmuch as both the birds and the eggs are considered the property of the woman. One who was asked concerning her personal possessions, mentioned only the milling stone (*metate*) and an assortment of poultry; another listed two hives of bees and various fowl. Of a neighbor woman, it is said, with righteous feminine indignation, "She is not the owner of the eggs of her house; she cannot sell a chicken or even an egg without permission of her husband."

A man occasionally remarks that "chickens belong to the woman because she raises them"; at the same time, he is not above adding that it is he who cultivates the maize which they are fed. If a woman has no poultry, her husband unquestionably gives the money with which she may buy a hen or chicks, and this she is not expected to return. But if she already has a hen and wants another, she must pay for it from the proceeds of her egg sales.

Female ownership probably is more theoretical than actual. Although no man would think of killing or of selling a chicken or a turkey without his wife's consent, a woman seldom sells poultry without consulting her husband. Should she sell in his absence, she reports the transaction when he returns home; "if she says nothing he is angry." However, the woman generally receives the money from the sale of both fowl and eggs. Generally, she is expected to spend it chiefly on kitchen supplies. Any surplus may be used to purchase special delicacies, such as "meat, cracklings, or bread," or it may be spent on clothing and trinkets. In needy households, the husband may dispose of the money; we know one family which places the entire proceeds from the poultry in a "kitty," from which fund the woman is expected to buy the bulk of the food, excepting the maize, for the whole family.

Poultry is popular. Of the 39 families for whom we have information, all but 2 keep fowl; and these 2 households happen to consist each of a lone individual. Of the remaining 37 families, 21 have chickens, and 16 have both chickens and turkeys; none raises turkeys alone. Numerically, chickens are more than 10 times as plentiful as turkeys. Our 39 families have a total of 124 turkeys, irrespective of sex and age; the corresponding total for chickens is 1,652.[16]

Both chickens and turkeys receive pretty much the same care. Young chicks are fed maize dough (*masa*), and for young turkeys, cooked greens are added to the maize paste;[17] larger birds live chiefly on dry corn. A turkey is said to eat considerably more than a chicken, and the latter forages, while the turkey does not. We can give no relative figures because our census forms call for a lump estimate of the maize fed to poultry.

Feeding estimates vary widely. The lowest extreme is found among a family which gives its 22

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[16] This figure probably is a bit too high. Data given by informants seemed reasonable, with one exception, that of a household which claimed to have 200 hens. Inasmuch as the property was not extensive and we had not noticed a major concentration of fowl, we asked a second time, and were given the same figure. However, neighbors say that this family probably has nearer 50 than 200 hens.

[17] This probably is an old culture trait. According to Sahagún (3:190), turkeys ". . . comen maíz mojado cuando pequeñas, y también bledos cocidos y molidos y otras hierbas . . ."

In Tzintzuntzan, chicks also are fed maize dough (Foster, 1948, p. 117), but this practice is not universal in Mexico today. In parts of Jalisco, chicks are given broken, dry corn, and in the highlands of Veracruz, about Altotonga, they are raised on broken rice and sesame (information respectively from José María Corona and María Cristina Alvarez).

half-grown and full-sized birds only 1 liter of maize daily.[18] In contrast, another family with four birds, feeds them 6 liters a day; and another with two, gives the pair 3 liters. We have data for 29 families; on an average, they give 1 liter of maize daily to every 6.1 birds—an allotment which seems reasonable.

Nests for setting hens are made of dry banana leaves or cornhusks, often directly on the earth floor of the dwelling and preferably beneath a bench, where they are out of the way. The most popular nest is one arranged within a large sherd of a clay jar. For a turkey hen the curve of the jar should be smaller than for a chicken, for "if the eggs roll from beneath the body, the turkey makes no effort to collect them." The sherd may sit directly on the floor, and we saw one placed, at least during the day, on the platform bed of the dwelling. For a turkey, invariably the nest is inside the house, otherwise she will abandon the eggs. Ana Méndez places it in one corner of the house and leans short lengths of bamboo diagonally against the house wall, to form a shelter over the nest. For chickens, the sherd (or a wooden box, in its stead) often is outside, on a frame supported by four forked sticks set in the ground. Each nest has its individual frame, generally against the house wall, where the eaves give some protection from sun and rain.

Many families provide no particular shelter for their fowl; of the 39 households mentioned above, only 8 have poultry houses. Grown birds ordinarily sleep out of doors, on the branches of a tree adjacent to the family dwelling. Here they are exposed to the inroads of raccoons and opossums and, moreover, "if a cloudburst comes during the night, they may fall from the tree and drown." During the rainy season, a special shelter generally is provided for hens with chicks. There are two principal kinds. One is a simple hut made of poles and bamboo, with a forked stick frame and with a thatched roof which may be either gabled or of one shed (pl. 17, *b*). More frequently a conical shelter is formed by leaning short lengths of bamboo against the trunk of a tree or against a vertical post (pl. 17, *a*). One or two lengths of bamboo are removed during the day; at night, the fowl are chased into the hut and the bamboo replaced. Probably this structure gives more protection from prowling beasts than it does from the rain. Occasionally a pen is built, with a flat palm roof, to provide shade for fowl during the spring months. Ordinarily, all poultry wanders freely, at least by day.

[18] A neighbor woman notes that this family complains frequently that its poultry has been stolen. Probably, she says, the birds are insufficiently fed and so wander from home.

### CHICKENS

We do not know in what year the Old World domestic fowl was introduced in the Papantla area, but it must have been accepted with alacrity by a people already used to turkey-raising because of a number of practical advantages: it is more hardy, eats less, and matures more rapidly.

A hen with no tail is supposed to be a good layer, but since the local stock is not bred for laying, most hens attempt to set with monotonous frequency. As a result, practically every Totonac woman is a chicken breeder. If a hen abandons the eggs, she is replaced by another, sometimes borrowed; in that case, the borrowed bird is returned, accompanied by one or two chicks, according to the size of the brood. The same arrangement holds if a rooster is borrowed, for not every family has a cock. Of our 37 families with chickens, 11 have no roosters, although one claims 40 hens. Among the remaining families, the ratio of cocks is highly variable. In one household, they almost equal the hens in number; at the other extreme, the ratio is 1 rooster per 50 hens. The average is about 1 to 7.

Eggs are inspected against a strong light, to determine whether or not they are fertile. By day, they are held against the sun which passes between the upright poles of the house wall; by night, they are held in front of a lighted candle. If the egg contains a dark spot (called *coronita*, little crown), it is suitable for hatching.

The number of eggs selected ranges from 8 to 15, according to the size of the hen. February is the best month for hatching; "then the cold weather is past and fewer chicks die." However, it is advisable not to set a hen during very hot weather, for the eggs "turn to water and crack." The moon has no bearing on the success of the enterprise, but eggs which are set on Sunday produce only male chicks; of the other days of the week, all are equally auspicious.

Some believe that a pregnant woman will have little success with chicks. It is preferable to set a

hen in the late evening, when the laundry for the day has been done; if clothing is washed immediately after the hen is set, the eggs will turn to water. Similarly, if one purchases eggs for hatching and must pass an arroyo on the return trail, it is necessary to "cure" the eggs. Dry tobacco and green leaves pulled from any tree at hand are placed in a container with the eggs, and over all, a bit of ash is sprinkled. Thus protected, the eggs may be carried across the arroyo undamaged.

Care is taken that a cock have no access to a setting hen, for fear the eggs will spoil. However, there is no technique for preventing a hen from breaking the eggs or from eating them. At the moment the chickens are hatched, it is essential that no one sweep the premises and that there be no family bickerings; either may cause malformation: feet with five toes instead of four, "clubfootedness," etc.

Once the chicks are hatched, the shells are sprinkled with ash and are left at a fork in the trail, "to confuse animals of prey." However, not everyone thus disposes of the shells. Agustina Méndez says that she "plants" hers; that is, she buries them so that the hens will not wander far from the house and thus run greater risk from preying animals. To protect eggs and chicks from dogs, a small nick is made in the ears and the tail of the dog; and as protection against hogs, alcohol is poured into the mouth of the pig; "it becomes drunk and later eats nothing."

A hen with chicks is tethered close to the house for a week or more, in the hope that the brood may escape the *aradores*, minute red insects which may cause death. A chick infested with these pests, has the head and tail singed with a burning splinter and the wing feathers cut; or the chick is bathed in salt water.

For the first month, young chickens are fed mostly maize dough. During Holy Week, they become very fretful ("*se ponen muy chillones*"). At this time the *laurel* (Appendix C, No. 130) is in bloom and, as a remedy, its flower is mixed with the dough. One informant thinks this preparation gives protection against the *aradores*. Occasionally chicks are given rice; they also are fed the wood borer known as *comején*, but the latter delicacy generally is reserved for the young turkeys. Grown chickens are fed twice a day and are given the entire maize kernel; a hen fed recently harvested corn will cease laying.

Chickens thrive in Tajín, but during winter, young ones may die of the cold. The two commonest diseases are sta·tat?ka, a fever, and paksui ·t, chicken pox (?) Other hazards are animals, such as the hawk, opossum, raccoon, lynx (?) (*onza*), and fox.

Chicken is eaten from time to time, but not very frequently; it and pork are the two meats which appear most commonly in the Tajín diet. To kill a chicken, the bird is held securely against the thigh, feet upward, and the head is given a sharp downward jerk.

A young cock sells for somewhat less than a pullet. If the latter brings, for example, $1.50 pesos, a cock will be worth $1.00 peso. But once grown, a cock (puyu; presumably from the Spanish *pollo*) consistently sells for more than a hen (stilan). Prices range from $2.50 to $3.50 or $4.00 pesos. Sometimes a vendor asks as much as $5.00 pesos, but with scant hope of extracting such a price without taking his bird to Papantla for sale.

To carry a chicken from one place to another, it is tucked under the arm, usually with the feet tied. Some carry a bird in the maguey fiber shoulder bag. One of the side seams is ripped a few inches and through this opening the head of the fowl protrudes.

When a rooster is either killed or sold, its feet are cut and are hung on the kitchen wall or are placed on a hanging shelf in the kitchen. The feet of immature cocks and of hens are not preserved. Interestingly enough, one informant observes this custom for turkeys but not for chickens. The objective is "*para que no se acabe la cría*," so that the strain may not end. For the same reason, a couple of feathers are plucked from the chicken of either sex when it is killed or sold, and in some kitchens sizable bundles of feathers are to be seen. Moreover, when a vendor chooses between two birds, that which does not meet with his approval is rubbed with ash and a few grains of salt are inserted in the beak; otherwise it may be eaten by a predatory animal.

Eggs bring a higher price in Papantla than in Tajín—often double; and, as an aside, the price in Papantla is about half that of Mexico City. There is considerable seasonal variation; begin-

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ning in Lent, eggs are abundant and the price drops. Ordinarily, eggs are plentiful in Tajín, although some families do not have a sufficient surplus to sell; in some households, they are eaten almost daily. The sale of both eggs and chickens is a significant item in many family budgets, and in case of emergency a woman invariably can raise a few pesos by selling her poultry.

Eggs which are sold are wrapped in pairs. One is placed in the concavity of the butt of a corn-husk, with the other immediately above; the tip of the leaf is folded over and tied in place with a narrow strip of husk.

### TURKEYS

Not every family keeps turkeys, because they are delicate, being sensitive to cold, to moisture, and to disease. Accordingly, the capital investment often is lost. As one man puts it, "We keep no turkeys because they die right away."

The turkey, male or female, is called čawila? Two kinds are distinguished—the dark and the "white," the latter very light, but mottled with tan. The "white" is preferable because it can be fattened in the course of 10 or 12 months, whereas a dark turkey "eats a great deal" and requires, at the very least, a year for fattening. However, the dark is much more plentiful than the light, and although Ana Méndez prefers the latter and has purchased eggs of this stock for her hen, she has had no success in hatching them.

Spring is the best time to breed turkeys, because there is no danger of cold weather. The hen either lays or is given 12 to 15 eggs, which hatch in about a month. Because of the thick shell, turkey eggs are not tested against the light for fertility.

For a week after the chicks hatch the hen is tied, so that she and the little ones may avoid the *aradores*, the pest mentioned previously. Food requirements of young turkeys are exacting. They are given *comején*, a white wood borer, which infests trees; great hunks of the trunk are cut and brought home, and from these the birds pick the insects. They are fed maize dough also, but with it are ground certain boiled greens—such as *yerba mora*, *quelite* (Appendix C, Nos. 6, 29), and an unidentified plant called lilišiput. Lacking these greens, the chicks do not grow. Turkeys raised by a chicken are healthier, because the latter is active and looks for food for her charges, whereas the mother turkey "only looks upward."

Even with grown turkeys one must take care with their food. Ana Méndez happened to have an excess of bananas (*plátanos morados*) on hand and fed them to her turkeys. They suffered from indigestion and lay down and refused to move. Doña Anita felt their crops and they were hard. Accordingly, she cut their wings and fed them maize dough with lime juice. Upon another occasion, the crop of one of her turkeys swelled with "air" because "the hens pecked him and he was annoyed." To cure him, she opened the crop with the thorn of an orange tree; pressing lightly, she extracted the air, and the turkey recovered.

A number of magical beliefs were recorded, but fewer than those associated with chickens. Probably the latter apply equally to turkeys, but since chickens are more plentiful conversation centered most frequently upon them. The same disposition is made of the egg shells after the young have hatched and, similarly, there are special observances when a rooster is sold or killed. If a hen is attempting to hatch his progeny, the claws of the roosters are tied to the wall or are stuck between the uprights which form the wall, and feathers from his breast are plucked and are placed with the setting hen. Otherwise, the chicks will not hatch. For an immature turkey cock no such gestures are necessary. However, if a vendor selects one turkey and spurns another, a feather is removed from the latter and saved.

Turkeys are too large to be killed on the thigh; instead, they are hung from a tree and the neck yanked downward. Turkey in *mole* sauce (p. 158) is a standard feast dish, and the demand is sprightly; moreover, nearby Papantla offers a ready market. Accordingly, turkeys are relatively higher priced than chickens and, incredibly, they bring in Tajín pecisely the same price as in Mexico City, about $25.00 pesos.

### OTHER FOWL

The duck (patuš; from Spanish *pato* (*?*)) is of little importance in Tajín and is of interest chiefly because it is the Muscovy type,[19] which is a

[19] Both males and females have the diagnostic patch of "red, rough, carunculated skin" on the head, although we saw one drake with it black instead of red. All have the characteristic horizontal, low-swung axis, although the difference in size between

New World domesticate, native to South America (Lee and Sheppard, p. 4). A post-Cortesian introduction among the Totonac is suggested by the apparent Spanish derivation of the "native" term.

In Talaxca, north of Papantla, the Totonac are said to eat the eggs, yet the bird is regarded by María Loreto as something of a luxury. Its chief function is to consume the ants (*arrieras*) which damage the gardens, and other pest, the *sonsopepe*, described as similar to a cockroach.

In Tajín, it is said that duck may be served with *mole* sauce and that the eggs either are boiled or fried; "they turn somewhat green when cooked in fat." However, we know only three households with ducks and none seems to exploit them. José María García has the largest number, with two drakes, about a dozen females, and a large brood of young. They eat "raw maize, mud, and small fish from the arroyo." Some 10 years ago, Don José María bought the ducks from Macario López, of Ojital. Although he has maintained the stock, he makes absolutely no use either of meat or eggs and keeps the ducks "only because he likes them." Similarly, Emilia Morales has an elderly, decrepit female, which he likewise appears to keep exclusively for sentimental reasons.

As with other fowl, it is customary to remove a feather when a duck is sold or killed.

Pigeons are even scarcer than ducks. We know of only two households, each with a handful. Some years ago, a dovecote was built at the school and the teacher attempted to encourage the breeding of the birds, with little success. A local superstition associates them with bad luck:[20] "One earns no money if he has doves in the house; or his wife may leave him; or he may die."

Although not domesticated, bird pets may be mentioned here. Sometimes young wild doves are captured in the nest and are brought home to be reared in a cane cage; "many die." The mockingbird is said not to survive in captivity. Occasionally, the oriole (*calandria*) and a parrot (*cotorra*) are mentioned as pets, but we have seen none. An ancient reference suggests that the coastal Totonac kept parrots on large scale, for among the gifts presented by "Quiahuixtlan" to representatives of the Mexican ruler, were "many birds of *papagayos*, yellow and green, very pretty and tame, and some speak Mexican words" (Tezozomoc, p. 218).

Probably the wild pheasant, commonly known as the *chachalaca* (Appendix D, No. 4), is the most popular pet. Either the bird is captured young, or eggs are taken from the nest and are set under a barnyard hen to hatch. When the pheasant is large, it generally escapes unless caged. In the house of Agapito Bautista, a small tame *chachalaca* is housed in a gourd, which hangs in the kitchen. A large opening has been cut, as an entrance, and the walls of the gourd perforated for ventilation. Near the bottom, is affixed a small cross stick, where the bird can perch.

In Tajín, as in other parts of Mexico, the tale of the crossing of the *chachalaca* and the domestic hen crops up. The hen, it is said, is placed in the cage with the male *chachalaca*. Several informants had heard that in Papantla, the hybrid was bred for cock fights. Only 7 years ago such cocks are said to have participated in the fights staged in Papantla to celebrate Corpus Christi.

The hybrid cock is described as very small and long-tailed; fearless, it is willing to tackle any opponent, regardless of size. Owing to the slight weight of these fighters, it is said that they were unpopular and the crossing was not continued. This is, even to detail, the same story which circu-

males and females is not very marked. Since this breed makes little noise, it sometimes is called the *pato mudo* (mute duck).

The distribution of the Muscovy duck is imperfectly known. It crops up occasionally among some of the circum-Caribbean peoples (Steward, p. 31) but seems seldom to be reported for Mexico. In modern times, it is found among the lowland Totonac in Tajín, Ojital, and Talaxca, and among the Maya (Steggerda, p. 146). A Huastecan lad, Tomás Martínez, from the Tancanhuitz area, does not recognize the duck from description. It is said to be common in "Indian communities" in modern Colima (Sauer, 1948, p. 65).

We have not attempted to search the literature for early Mexican references and few reports have come to our attention. In the late sixteenth century, a native domestic duck is mentioned in Michoacán (Relación de Ajuchitlán), and in the seventeenth, one of unspecified antecedents is reported in Oaxaca (Burgoa, p. 21). Landa (p. 247) relates that the ancient Maya raise (*crían*), for their feathers, large white ducks (*anadones*), which he believes to have been introduced from Peru. Domestication is by no means certain, since elsewhere the same authority (p. 251) states flatly that the only domesticate is the dog. He may refer merely to ducks kept in captivity.

Sahagún (3 : 191), who gives considerable attention to flora and fauna, lists only the wild duck. Diaz del Castillo (1 : 321) speaks of wild and tame ducks. The ancient Mexicans used duck feathers extensively, and there are two references to ponds stocked with them (Cortés, in Gayangos, p. 94; Cortés, in Lorenzana, p. 77). In one case, the term *"Lavancos"* is used, which in itself implies a wild form. Probably it may be concluded that the Mexica kept ducks in captivity but did not domesticate them.

[20] In Tuxcacuesco, Jalisco, pigeons also are associated with ill fortune (information from José María Corona), and the same holds for at least some pueblos of the Distrito Federal.

lates in many parts of western Mexico and which is as yet unproved by any critical eye witness.

### DOGS AND CATS

In 1579, it is said that the Totonac of Misantla "do not have and never have had a larger animal than a dog, and this is very small" (Relación de Misantla).[21] The following year, "*perros de Castilla*" are reported among the Totonac of Coacoatzintla, near Jalapa (Paso y Troncoso 5:110).

In Tajín today, dogs are relatively numerous. Out of 38 families, 14 keep no dogs, but the remaining 24 have a total of 68, plus 15 pups. As a matter of fact, these figures assuredly are low, because most of the families of our census live within the *fundo legal*, that is, in the most settled zone of the community. If one lives close to his neighbors, the latter's dogs will set up an alarm when anyone approaches, but if one lives in an isolated house, he must depend upon his own watchdogs. Two families of our census, who live removed from the *fundo*, have 7 and 12 dogs respectively; another has 4.

Theoretically, the dogs set up a great hue and cry when anyone approaches the house, and the progress of a traveler at night can be followed for miles, by the barking on all sides. However, one day, I effectively ran the gamut of several hounds at the house of Pablo González, and to the undisguised surprise of the hosts, reached the kitchen door unannounced. Don Pablo thereupon explained that his dogs barked only at people who wore "Totonac" clothing, and those in city garb were unmolested. To reinforce his point, he added complacently that only the week before, the son of the house had been bitten, presumably because he was wearing *calzones*.

Dogs guard not only the house, but the poultry as well, and many an opossum meets its fate because the dogs give the alarm. Ana Méndez has her two little hounds so trained that they help "herd" the chickens. If one escapes, she calls the dogs; they chase the bird until it is so exhausted that Doña Anita is able to catch it without undue effort.

Dogs are used for hunting (pp. 74–75); probably few really are trained. Nevertheless, informants speak casually of hunting dogs, but apparently refer to professionally trained animals known through contacts with Papantla. A dog "of good race, already trained," is worth from $100 to $300 pesos; pups, from $25 to $50 pesos; needless to say, these are Papantla prices. In Tajín, Santiago Simbrón is said to have a fine dog; Bartolo Simbrón reputedly paid $100 pesos in Papantla for a bitch with a vague resemblance to a setter; Felipe Santes is said to have bought a hunter for $200 pesos; and Jacinto García also has "several."

Local dogs are quite differently priced. At most, one brings $5 pesos in cash, and Vicente de León sold one litter at about $2.50 each. Manuel de la Luz recently traded half a *fanega* of maize to Juan Castro for two attractive, better than average pups which he hopes to train as hunters. A Totonac who sells a dog generally lops off the tip of the tail—as usual, "so that the strain will not die out."

About all that can be said concerning the local canine race is that it is, on the whole, long-legged and short-haired. Males are more popular because "they do not attract other dogs." However, young Erasmo Xochigua prefers a female, remarking that when his bitch accompanies him to a strange house, the watchdogs are so interested in her that they pay scant attention to him.

Dogs are fed tortillas and kitchen scraps. They are catholic in their tastes and eat various fruits (papaya, oranges, *limas*, bananas, *zapote chico*); some will eat sugarcane and most like brown sugar. As a fine bit of rationalizing, dogs are not given broth with the tortillas, "because later, if there were no broth, they would not like the dry tortilla and might die of indigestion."

If a hunting dog is injured while attacking a peccary it is treated by magical therapy (p. 75). Otherwise, Totonac pay scant attention to a sick dog, even if it has a simple infection which could be cured with readily obtainable *creolina*. Through carelessness a wound may become infested with "worms," as a consequence of which the animal generally dies. Dogs sometimes eat, with fatal effects, the spoiled meat of some dead animal picked up in the forest. "Because they have fleas," dogs generally sleep outside, and occasionally die of the cold. The owner of two who demised last winter lamented; but she explained

[21] This is the only mention we have found of the native dog among the Totonac. The sixteenth century Maya are said to have small domesticated dogs, "which do not know how to bark," and which are eaten upon festive occasions (Landa, p. 251).

that she could not let the dogs approach the fire, for fear their eyes would become infected and they would develop mange.

A young pup may die if the fleas are removed from it or if it is given a name. When half-grown, a dog generally receives an unimaginative Spanish name. Two yellow canines are called *Canela* (cinnamon); other names include *Volcán* (volcano), *Buque* (ship), *Tigre* (tiger), *Zorrilla* (skunk), *Negro* (black one), *Bonita* (pretty one), *Jazmín* (jasmine), *Cazador* (hunter), *Payaso* (clown), *Solita* (little lone one), *Tlacuachita* (little opossum), *Maringuilla* (the female impersonator in the Negrito dance), and *Camerilla.*

Cats are less numerous than dogs. Of the 38 families mentioned above, 23 have no cats; the remaining 15 account for a total of 28. It is said that in adjacent Gildardo Muñoz there is a cat in every house, in the interests of rat control. Ana Méndez adds that a cat also is useful in killing lizards, which otherwise eat the thatched palm roof.

Modesto González summarizes his objections thus:

> Not all cats are good; sometimes they rob food from the kitchen; and they may soil the house. When a cat has young, she may bring a dead snake to them, or a rabbit, or a piece of dried beef. If she brings the snake, it is bad enough, but worse if it is dried beef, for she must have stolen it somewhere. For these reasons, not many people have cats.

Apart from these forthright reasons, it may be added that a good many people suspect that cats have traffic with the devil (*demonio*). There should be no black cat, at least, in a house with young children. It frightens them and, moreover, it might eat the spirit of the child, with fatal result.

With a few exceptions, the cats are indescribably wretched in appearance and evidently receive worse treatment than does the average dog. Nevertheless, Pablo González has a yellow cat which is almost fat and so much of a pet that she reclines much of the time against the warm clay *hornilla* of the kitchen "stove." The cat of Carmen Pérez Reyes also scrambles frequently on the earth-covered table which serves for cooking; and that of Rutilio Olmos is moderately sleek, sleeps on its master's blanket, and receives caresses from the adolescent boy of the family. These are, however, outstanding exceptions. By and large, cats are the most miserable looking bit of animal life in the community. They are pathetically underfed and ordinarily receive no attention from the family. Usually they do not have individual names, but in one household, a female is called *Jalisca.*

### BEES

Little income is derived from bees. Only two families of our acquaintance make a practice of selling either wax or honey; occasionally a few candles may be sold, chiefly as an accommodation to a friend, who needs them for a birth, a funeral, a curing treatment, or some other special occasion.

Nevertheless, about half the families in Tajín keep bees on a small scale. Of the 39 households for which we have data, 18 have bees. Of them, 13 have the native bee; 3, the Old World, introduced form; and 2, both types. The native bee is housed in a length of bamboo, in a hollow tree trunk, or in an earthenware jar (pl. 4, *b–d*, *f*); each "hive" is known as a *colmena* (taškat'). In contrast, the Old World bee invariably is kept in a wooden box (pl. 4, *e*), and its hive is referred to as an *enjambre* (swarm), never as a *colmena.*

A candle of the wax of the native bee plays a prominent role in certain ceremonies, especially those associated with birth and death; the wax of the introduced bee is not an acceptable substitute. However, in certain parts of the same ceremonies, candles of the wax of the Old World bee are used; moreover, they alone are placed on the altar in honor of the Christian saints; and they also are used in Catholic rites generally, and for "purification" ceremonies, in the course of which the body is stroked with candles.

### THE NATIVE BEE

Two kinds of native bee are exploited; one, at least, is genuinely domesticated, since new colonies are propagated. This is the *colmena real*, known in Totonac as taškat', tasqat, or kiwitáškat. The same term (taškat') is applied to honey of any kind, to sugarcane juice, and to the hive of the native bee. The latter is said to have a small sting and to live either inside the stem of the bamboo or in hollow trees.

The other type of native bee is called koamekas, or kualméka (dubiously considered Totonac); it has no sting whatsoever and has the same living habits as the other form. It is scarce and rarely is

to be seen either in the forest or in the yards of the houses.[22]

Theoretically, "the old man of the *monte*"—who controls the destiny of game animals and who often is identified with stone figures found archeologically—is the "chief" of the wild bees. A similar belief probably held in the Huasteca, where one of the stern questions put to Indian charges was, "When you go to hunt, or to look for beehives, do you speak first or do you give food to the idols which are in the forests?" (Tapia Zenteno, p. 107). Today, Christian saints have invaded the domain of the "old man of the *monte*." One informant believes that St. Lawrence has charge of wild bees; another, St. Anthony.

A Totonac who finds a hive of usable wild bees may cut the trunk of the tree, extract the honey, and close the gash with mud or ash. Or he may cut the trunk or the bamboo with his machete, and, without further ado, carry home the length which contains the hive. Water is not sprinkled on the cuts (cf. Foster, 1942 a, p. 538), and no smudge or other protection is needed, for the native bee does not sting.

The trunk containing the hive is hung against the wall of the house, "where it will not receive much sun." We have seen such hives on north, east, and south walls. Generally, the trunk is placed horizontally, supported at each end by a length of liana. If too high, close to the thatched roof, the *tepehua* ants may destroy the colony, although it is said that each hive has a bee which stands at the entrance, as a sentinel, to warn of intrusion. Some say that if the trunk is hung too low, the chickens will devour the bees; others affirm that they eat only the Old World form. At one house, the trunks merely are leaned vertically against the kitchen wall; at another, the hives reputedly are hung inside the dwelling.

The removal of the honey and wax is known as "castration." Some "castrate" every year, but most, every other year, generally in late October or in November. However, if a neighbor needs honey urgently as a medicine, a beekeeper usually is willing to open a *colmena*, except in very cold weather. In that case, he refuses, for the bees may die.

"Castration" is performed by either a man or a woman. There are no special requirements, such as continence or fasting (cf. Foster, 1942 a, p. 538). One informant recommends smoking a cigar or burning incense as a soothing measure, but others give this same advice in connection with the Old World bee, not the native form. The trunk or the bamboo is split longitudinally through the center and the honey and wax are removed. Sometimes the bees are returned to the same trunk, which is closed, tied with liana, and the split sealed with a paste made of ash and water. At this time, great care must be taken that no insect pest penetrate the *colmena*. An infinitesimal "fly" (called *pedorrilla;* iškaλ, škał) may enter and lay eggs; these become "worms" which eat the young bees.

Informants claim that the native bee does not swarm. Consequently, when the bamboo or trunk is opened, generally the hive is divided and a new colony established in an earthenware jar.[23] The progeny is contained "in a round thing, like a tortilla, not very thick"; these are formed one on

[22] A third type (ču.nín, čuamín) is larger than the preceding ones and has a long sting. Its hive is not brought in from the *monte,* although the wax and honey are removed. The honey may amount to "2 gallons," and the wax may fill a wooden tray. The honey has a distinctive taste which appeals to few people.

In addition, Modesto González lists a number of insects which he classes with bees, evidently including wasps and possibly other related forms. These produce little or no honey and wax, hence are not exploited. The stitit' is stingless and lives in bamboo thickets; the ča·yán also has no sting and lives "in any tree"; the ča·yán has a small sting and similarly is not fussy about its dwelling. The akstú.nat, known in Spanish as *cojón de toro* (bull testicle), stings sharply and builds a nest which hangs, baglike, from a tree. The "bee" known as ška-ná? is "ferocious" and attacks people; for this reason, it is called facetiously, *Otomite* (Otomí Indian). It is found in holes in the ground or among rocks.

A minute form, called skulún, is said to be the size of a gnat. We have no further data concerning it.

[23] This is of particular interest because it indicates true domestication. Foster's brief survey of apiculture (1942 a, p. 538) indicates that "the final step, the propagation of new colonies, is but rarely taken."

His review (p. 542) of the types of containers indicates that clay hives were common in Colombia in the late sixteenth century but that "no examples from modern times, or archaeological specimens, are known." Accordingly, we may note the few cases, other than Tajín, which have come to our attention.

Pottery hives are reported (by Bodil Christiansen) for Mexican Cuetzalán, in the Sierra de Puebla.

They likewise have been observed (by G. Stresser-Péan) "in one part of the Huasteca." As far as we could tell, the native bee seems to be little exploited in the Tancanhuitz zone of the Huasteca. Honey and wax sometimes are gathered in the *monte,* and occasionally the trunk is cut and the hive transported to the house. However, two mestizo informants in Tancanhuitz independently described the use of clay vessels as hives, and a similar report comes from farther south, in Matlapa, near Tamazunchale. Once part of the Huasteca, the Matlapa area now is predominantly Mexicano. Townspeople report clay hives, although we saw none.

Finally, in Ixcateopan, Guerrero, Ing. Roberto Weitlaner was informed that in a nearby village to the west, bees are kept in pottery jars.

top of the other in the hive and are surrounded and covered by "the nest." The latter is broken, and the upper half of the superimposed disks is removed to serve as the nucleus of the new colony.

Previously, a sizable clay jar is prepared. A small hole is punched in the side, as an opening; but for the present, this is stuffed shut, usually with a bit of paper and ash paste. In the bottom of the jar, two slender sticks are placed parallel to one another, and on top of them, at right angles, two more are arranged. On this four-stick frame, the disks containing the new colony are placed. "not everyone uses the frame"; some put the comb directly on the floor of the vessel.

The mouth of the jar is tightly covered—with a gourd, whose convex surface fits into the aperture; with a large sherd; or with boards from a box. Ash paste is smeared over the junctions and the bees are left 4 days within the sealed jar. During that time, they produce a very hard, dark gum, apparently peculiar to the native bee, which is known as *atakawite* (perhaps a Mexican word, hispanicized; the Totonac term is kaskála),[24] and with this they seal the cover in place and modify the opening in the side wall. At the end of 4 days, the plug is removed from the aperture and the bees come and go at will.

Pottery hives are hung from the wall of the house (pl. 4, *b*, *c*); or they sit on a horizontal pole (pl. 4, *f*), or on a series of shelves (pl. 4, *d*) which raises them off the ground.

The honey of the native bee is considered primarily medicinal, although some eat it "for pure pleasure," with a special kind of bread (*pan de agua*, made of flour and salt, but without eggs). Anyone who consumes honey in quantity is likely to run a temperature, since it is a "hot" food. Unboiled honey has greater potency as a remedy, but most is boiled, then stored in a clay jar. Mixed with alcohol (*refino*), it is taken as a tonic by debilitated persons of either sex and is considered especially helpful during pregnancy. A tea made of honey and *yerba dulce* (Appendix C, No. 150) is drunk to relieve menstrual pain. Both sexes take honey for abdominal pain generally, and it is said to be effective in speeding slow parturition. After birth, the mother may have no milk for several days; if it is unduly delayed, the infant is allowed to suck a rag saturated with honey. One of our friends, unable to nurse her child during the first month following birth, reared him largely by means of the honey-soaked rag. In none of these cases is the honey of the Old World bee an acceptable substitute.

The wax, known as *cera puera* (dirty wax; líltam), is squeezed in the hands over a gourd, to release it from the honey. Sometimes it is exposed to the sun for a couple of days; sometimes it is boiled at once. Nobody, man or woman should watch the operator as the wax is being boiled. In the evening, it is placed with water in a pottery jar and the latter is left on the fire throughout the night. In the morning, the pot is removed from the hearth and cold water added. By the following day, the wax has solidified on the surface, in the form of a cake whose size and shape correspond to that of the mouth of the jar. The wax, which is very dark, is washed well and is rubbed between the hands until it turns yellow. It is not boiled further but generally is formed into round cakes.

We have no precise figures concerning production. As a general thing, a family has from 1 to 5 *colmenas* of native bees; however, one household has 10, one 16, and another, 32. A woman whom we asked claimed not to know how many hives she has; the bees leave, she says, if one keeps close count. Estimates concerning wax vary widely, from an eighth to a full kilogram per *colmena*. Obviously, the quantity varies according to the frequency with which the wax is collected. Some count the yield in liters, saying that three or four hives may produce an *almud* (12 liters). Although this is a measure by volume, in Papantla, wax is purchased by weight—formerly by the pound, now, by the kilogram. The current price is $4.50 pesos; wax of the Old World bee sells for slightly more.

In Tajín, most families retain the wax for personal use. It is consumed almost exclusively in the form of candles (líltam makantíla; from Spanish *candil*, *candela*?)—thin, ill-shapen, and very brunette candles, which "smell very pretty as they burn." Each household generally makes its own candles; occasionally when an emergency arises, they are purchased from neighbors. Sale is

[24] *Atakawite* is not medicinal. With it are mended pots or gourds, or any other container which is used for liquids but which is not put on the fire. The gum is melted and the break sealed. Formerly, although not within the memory of our informants, *atakawite* was used to illuminate the house at night. A small amount was lighted and placed on a sherd or in a clay dish; no wick was necessary.

frowned upon, because ordinarily the candles have been blessed by the priest the Day of Candlemas (February 2).

To make the candle, some moisten a table top with water and spread the wax on it in a sheet—about 10 cm. wide and the desired length of the candle. A wick of commercial twine is dipped a couple of times into the melted wax and then is placed on the center of the wax sheet. The edges of the latter are folded over to enclose the wick, and the whole is then rolled until a candle of sorts is produced. Some merely roll the wax between the palms, working the wick into it. Occasionally, the wax is melted and the wick dipped into it several times in succession; but never are the wicks suspended from a wooden hoop and the wax dribbled on them in sequence, as is the practice when making candles of the wax of the European bee.

Díaz del Castillo (1:192) notes that the Spaniards showed the Totonac of "Cempoala" how to make candles from the wax of the native bee.

### THE OLD WORLD BEE

Only one type of imported domestic bee is recognized in Tajín. It is far less popular than is the native form; fewer families have hives, and the average per family is lower. We know only one household which has more than three hives, this exception being that of José Bautista, who makes a practice of selling wax and honey. He has 38 *enjambres* of the intrusive bee, 32 *colmenas* of the native form.

The Old World bees are "delicate; not everyone can raise them." When a married couple bickers constantly, either the bees leave or "worms" destroy the hives. The same calamity results from marital infidelity and from drunkenness.[25] Informants cite concrete examples with pleasure. A couple we know wrangles incessantly; both work diligently at beekeeping, but with little success. Neighbors remark that the case is hopeless. Another example is that of an old gentleman, now dead, but a contemporary of the informant's grandparents:

> He was a man who lived "very correctly." Once he went to Papantla to sell the wax from his *enjambres*. There he met a friend who persuaded him to sell it in Gutiérrez Zamora instead. The two went there; they started to drink, and the trip ended in a big drunk. When the man returned to Tajín, he had no bees. Formerly the patio of his house was full—but now all had gone.

The Old World bee is particularly sensitive to contact with death. If one goes to a wake, he should bathe before approaching the hives, or the bees may leave. To soothe them, a black cloth, as a sign of mourning, is placed on the box, or two or three crosses are marked on it with soot. It also is prudent to bring a candle from the wake and to break it in small lengths, putting several, presumably lighted, on top of the box in which the bees are kept.

The Old World bee requires more care than does the native form. Boxes are arranged in the shade, beneath shrubs in the patio of the house or under a simple palm-thatched roof. They rest on two sticks, which raise them a few inches from the ground. Sometimes, during rains, the boxes are moved inside the dwelling for protection. To avoid a certain "worm" (kaltísalu⁹a), the box must be cleaned from time to time and smoked with incense. *Tepehua* ants (ta¢aná⁹a) also are a pest, for they enter the hives and eat the young. A certain bird (akpíli⁹lit) roosts on a nearby tree and eats the bees as they emerge from the hives, and the domestic fowl also makes inroads.

Some obtain their original stock from swarms which have escaped to the *monte*. According to one observer, the domestic bee swarms three times a year. The first and second swarms are the largest; the third is the smallest, but it also is the best, because the bees of this lot "are very hard-working."

To attract a swarm and to keep it from escaping, a gasoline tin or some other metallic object is beaten. Meanwhile, preparations are made to capture the bees in a box. The latter is a common alcohol, gasoline, or kerosene box (capacity, two 5-gallon tins) (pl. 4, *e*) purchased in Papantla. It is washed and a bit of copal incense burned inside, "to give it a nice smell." Some rub the box with brown sugar to make it more attractive.

If the swarm lights on an overhanging branch, the latter either is shaken gently or is lopped off

[25] There are no such associations with the native bee—perhaps one reason why it is the more popular. The correlation between beekeeping and righteous living may be Old World. At least, in the mestizo town of Tuxcacuesco, in Jalisco, there is a common belief that earnings from bees should be spent on clothing or food, not on "vices," such as tobacco and wine. Otherwise, the bees will abandon the hive (information from José María Corona).

Foster (1942 a, p. 539), however, reports that the Popoluca believe that the native bee cannot be kept successfully by families who squabble continuously.

with the machete, so that the bees will fall into the box. Otherwise, a "broom" is made of *capulín* (Appendix C, No. 85) "because it has a nice odor"; it is dipped in water, and with it the bees are brushed from their resting place into the container. The box is covered with a cloth from 4 to 6 days, until the comb is begun and the bees are less likely to leave.

The Old World bee has a sharp sting and some protection is necessary. When bees swarm, their pursuer carries a smudge of corncobs in a home-made pottery incense burner (fig. 45). Some who handle bees burn a large cigar; others prefer incense.[26]

"Castration" takes place every two or three months, but not when the young are plentiful nor when the rains are heavy. The bees are quieted by smoke; the box is opened, the combs removed and cut with a sharp knife. A bit of honey is left as nourishment. The honey is extracted simply by squeezing in the hand. If it contains much foreign material, it is strained through a thin cloth. José Bautista sells a bottle containing three-fourths liters of honey at 25 centavos.

The bee, the comb, and the wax seem all to be known by the Spanish term, *cera* (wax). Some wax is sold to the stores in Papantla, at $5.00 pesos the kilogram, a price slightly higher than that of the native bee. Most people in Tajín prefer commercial candles, but home-made ones are prepared from unsold wax; these vary, according to size, from 10 centavos to a peso. Wicks of purchased twine are hung from a loop of liana, which is suspended from the rafters of the house. With a spoon, the molten wax is dribbled in turn over each wick; the latter are not dipped.

A candle of the wax of the introduced bees is known simply as kantíla (Spanish *candil*, *candela?*). It is used for illumination, for burning in honor of Christian saints, and for "curing" or purifying a person by stroking. A dying individual is given a lighted candle of *cera puerca*, duly blessed, to hold. But for certain subsequent ceremonies connected with death (the funeral, and rites which take place the ninth and eightieth days following death), candles of the wax of the Old World bee are used. There seems to be some correlation between introduced ceremonies and candles made of the wax of the introduced bee; and, in part at least, candles of *cera puerca* are associated with ceremonies which appear to be basically indigenous.

[26] Said to be the type brought for sale by traders from the highlands. Assuredly, this is copal incense; in fact, the vendors call it "kópali." One informant is certain that it is different from the incense bought in Papantla, but a storekeeper there assures us that *incienso* and *copal* are one and the same.

## AGRICULTURE [27]

Since early times, the Totonac have been an essentially agricultural people. In "Cempoala," the Spaniards found ample provisions, as well as generous hospitality, and local economy evidently was based on intensive agriculture, accompanied by irrigation.[28] For two Totonac pueblos of the same general area—Colipa and Tepetlán—there are sixteenth-century reports of irrigation, as well as for a nearby Mexican town, Atexca (Paso y Troncoso 5: 115, 117, 120). The Tajín Totonac do not practice irrigation, which seems out of the question, given the rugged terrain and the frequent shortage of water.

In Tajín today, virtually every family plants. Men are the farmers, although women sometimes assist in the fields, and a few carry about as heavy agricultural responsibilities as do the men. The mainstays of local agriculture are maize, cane, and vanilla, of which the first is an aboriginal crop, the second an introduced one, and the third, aboriginal, but apparently not ancient in the Papantla zone. Maize is grown chiefly for home consumption. Any surplus is sold, but most families harvest only sufficient for their needs. Some produce less than they consume and are obliged to buy toward the end of the season. Cane is grown both for local use and for sale. Probably Tajín produces most of the brown sugar it consumes, and some families derive a considerable cash income from the sale of sugar in Papantla. Unlike the preceding, vanilla is exclusively a cash crop.

The Tajín trio of maize, cane, and vanilla is by no means general throughout the Papantla zone. Gratuitously, the Federal census taker has in-

[27] A number in parentheses following the name of a plant refers to the herbarium catalog, in Appendix C.

[28] We have found no early report of irrigation at "Cempoala." However, Ing. José García Payón (letter of December 19, 1949) has discovered archeological evidence of irrigation canals; these, he says, have been widened and are in use today. One of his published reports (García Payón, 1949 b, pp. 453–454) indicates, moreover, that potable water was brought to the settlement through a system of canals.

dicated, in a number of Totonac settlements of that municipality, the major crops grown by each family. The data are summarized below, with entries in terms of the number of households.

| | Tajín | Plan de Hidalgo | Plan de Palmar | Santa Agueda | Volador |
|---|---|---|---|---|---|
| Maize only | 10 | 5 | 2 | 0 | 3 |
| Maize, cane | 1 | 0 | 0 | 0 | 0 |
| Maize, vanilla | 30 | 44 | 40 | 0 | 24 |
| Maize, cane, vanilla | 56 | 22 | 0 | 0 | 0 |
| Maize, beans | 0 | 3 | 5 | 36 | 173 |
| Maize, beans, vanilla | 0 | 0 | 11 | 0 | 0 |
| Vanilla only | 0 | 0 | 0 | 0 | 1 |
| Not specified | 37 | 15 | 0 | 0 | 0 |
| Total | 134 | 89 | 58 | 36 | 201 |

The only basic crop common to these several Totonac settlements is maize. Tajín and Plan de Hidalgo are situated close to one another and, expectably, their crops are roughly parallel; both emphasize maize, cane, and vanilla. In Plan de Palmar, maize and vanilla are prominent; beans also are reported but cane is not mentioned. Maize and beans are the standard crops in Santa Agueda; they likewise predominate in Volador, which has, in addition, some vanilla but no cane.

The selection of crops is, in part, a matter of personal choice. Pedro Pérez, for example, prefers cane to vanilla: "at the end of a year, the cane can be crushed, but it is 3 years before vanilla produces. Moreover, one must guard vanilla carefully or it is stolen." In part, however, natural requirements of the plants limit the choice. A level field, with poor drainage (known as an *aguachal*), will serve for cane or for vanilla but not for maize; the latter requires good drainage and does best on slopes. Vanilla can be grown either on lands of good or poor drainage, but both the yield and the life of the plant vary according to soil conditions.

### MAIZE-VANILLA ROTATION

Somewhat optimistically, one informant thinks that a maize field may be planted continuously for 25 years, provided it is well tended and weeds do not have a chance to establish themselves. Most, however, put the estimate much lower. "In the old days," according to Modesto González, a field lasted from 15 to 20 years; at first, two harvests annually were possible, later, only one. Tirso González calculates four good harvests (that is, 2 years) from a new field, after which the production diminishes noticeably. However, he says that ordinarily a field is worth cultivating 8 to 10 years.

As a matter of fact, the maximum duration of a maize field no longer is of much interest to the Tajín farmer. Generally, at the end of 2 to 4 years, a field is allowed to grow to *monte* and, at the same time, the crop is shifted from maize to vanilla. Maize requires a clean field; vanilla requires *monte bajo*. Since from the start it is a losing job to protect the maize from the incursions of the *monte*, the Totonac solution is very logical. *Monte* is allowed to take possession of the field and vanilla is planted in it. The *vainillar*, or vanilla field, endures about 10 years, although toward the end of this span the yield is low. As a rule, after 12 years, at the most, the vanilla is abandoned and the field is given up completely to *monte bajo*. This is allowed to grow unmolested for 10 to 12 years, following which it is cleared and maize planted anew.

In the opinion of the Totonac, this lapse of a decade is necessary—not so much for the rehabilitation of the soil as for the growth of the *monte*. If a field is cleared of young, half-grown bush, the latter does not burn well. The seeds of many annual weeds survive, so that when the plot is planted, the corn is choked by a luxuriant growth of *mozote*, *coyolillo del ratón*, *zacate de venado* (Nos. 325, 311, 288, respectively), and other aggressive plants. Weeds are no imaginary menace, and with monotonous frequency one hears that so and so has abandoned his field: "*le ganó la yerba*," or "*se acahualó la milpa*." Of our acquaintances, at least eight lost their corn crop in 1948 because they were unable to curb the growth of weeds.

Although virtually all Totonac farmers seem to feel that their chief problem is the never-ending struggle against the weeds, most also recognize the fact that the soil becomes exhausted. Despite the lush natural vegetation, the top soil is relatively thin—generally, not over 50 cm.—and it is only expectable that it cannot stand continuous cropping over a period of years. We have no concrete data concerning soil exhaustion, but the three adjacent cornfields of Víctor Morales are suggestive. One, cleared a year ago, has tall, strong plants; another, cleared 2 years before, has smaller plants; and in the third, now in its third year, the growth

appears stunted. All are said to have been planted simultaneously. Other factors may be involved, but the implication of soil depletion is strong.

On the contrary, we have figures from one field which has been planted continuously for 7 years (ftn. 44, p. 119), but the yield of which nevertheless is well above the general average. This suggests that the local situation may be parallel to that of Yucatán, where a series of controlled experiments indicates that soil exhaustion is slight and that decreased yield is attributable chiefly to "increasing weed competition" (Morley, p. 148).

Fertilizers are used only incidentally in Tajín and are limited to the ash from the initial clearing and, in subsequent years, to the litter of stalks from the preceding crop and the weeds removed in the course of cultivation. One of our friends, thoroughly bilingual, does not even know the Spanish term for fertilizer.

While most Totonac take soil exhaustion as a matter of course, an exception is Santiago Simbrón, owner of the field mentioned above as still producing a better than average harvest after 7 years of continuous planting. He expresses his opinion thus:

> The soil does not wear out. The first harvest is as good as the second, or the seventh; and the first year and the last are the same. At least, so it seems to me. What changes are the rains, the sun, and the wind—but not the earth, if the planting is made in the same field.

The only deliberate rotation of crops is found in the maize-vanilla cycle. Some plant sugarcane when the maize yield declines, but apparently this is not a general practice, probably because of differences in moisture and drainage requirements. However, inasmuch as most crops, except vanilla and cane, are planted in the maize field, automatically they follow the cycle of the latter.

In any case, there is a long term maize-vanilla-*monte* rotation, which takes 20 to 25 years to complete and during approximately half of which the land lies fallow. If this cycle is applied strictly, on the assumption that all land is equally suited to maize and vanilla, each family would require about 12 hectares of land.[29]

How does this theoretical requirement accord with the amount of land available? If we disregard a scattering of fields which spill over into Tlahuanapa, Gildardo Muñoz, and Coatzintla (map 8), there are 114 parcels of land, of approximately 31 hectares each, which either belong to Tajín or which are exploited by the Tajín Totonac. And these 114 parcels are utilized by a total of 205 families.[30] There is, accordingly, an average of about 17 hectares per household. If we deduct the vacant land parcels and those which are not planted, a total of 99 parcels actually is exploited, and the average per family drops to about 15 hectares—somewhat more than present minimum requirements.

All this reckoning is, of course, largely theoretical, but it agrees pretty well with our general impression that there is a comfortable surplus of land. Naturally, in practice, the distribution of lands is quite uneven, and while some families are abundantly supplied, others are beginning to feel the pinch. We may guess that within another generation or so, the present allotment will be barely sufficient for the needs of the community, provided the current pattern of land utilization is continued.

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[29] This figure has been calculated as follows: We assume that each family plants 1.5 hectares of maize each year. We assume, further, that the same plot is planted for 3 successive years, at the end of which time it is given over to vanilla and a new field cleared for corn. Accordingly, beginning with the fourth year (see below), a family would have 1.5 hectares of maize and 1.5 of vanilla. In the seventh year, it would have a new maize field of 1.5 hectares, and vanilla holdings of 3 hectares. By the tenth year, vanilla would have increased to 4.5 hectares, to which we shall arbitrarily limit it. With the start of the thirteenth year, the original field—which has been planted 3 years to maize, followed by 9 of vanilla—is allowed to revert to *monte*. In the sixteenth year, fallow land amounts to 3 hectares; in the nineteenth, to 4.5; in the twenty-second year, to 6 hectares.

| Years | Maize | Vanilla | Fallow |
|---|---|---|---|
| 1–3 | 1.5 | | |
| 4–6 | 1.5 | 1.5 | |
| 7–9 | 1.5 | 3.0 | |
| 10–12 | 1.5 | 4.5 | |
| 13–15 | 1.5 | 4.5 | 1.5 |
| 16–18 | 1.5 | 4.5 | 3.0 |
| 19–21 | 1.5 | 4.5 | 4.5 |
| 22–24 | 1.5 | 4.5 | 6.0 |

By the end of the twenty-fourth year, 12 hectares of land are or have been in use. Also, by this time, the original 1.5 hectares have lain fallow for 12 years, and the cycle starts anew.

[30] There is a total of 186 families in Tajín; moreover, two families from Papantla and one from Tlahuanapa exploit Tajín lands, as do 16 who give public labor in Ojital. The total, therefore, is 205.

This figure is only approximate. For example, 10 of the Tajín and one of the Ojital families do not plant; another Ojital family plants in Coatzintla. We assume that these discrepancies are offset by (a) the several Tajín families who plant on lands outside the community, and (b) the Ojital parcels which are exploited jointly by Tajín and Ojital citizens, although, with few exceptions, neither the fields nor the houses of the latter appears on map 8.

This pattern probably is of fairly recent development. There is no indication that vanilla is an ancient cultivate in the Papantla zone, and vanilla production has increased considerably within the memory of informants. Recent or not, the rotation scheme is well entrenched, probably because it accords so neatly with the inability to cope with the *monte*. Moreover, it has other points in its favor. Although the present pattern of land utilization cannot be considered particularly economical, at least it offers a certain degree of stability and permanence. If the *monte* and annual weeds were curbed sufficiently to permit continuous planting, assuredly fertility would be reduced dangerously. Moreover, about the only way of curbing the *monte* would be to eradicate it by root—in which case, the incursion of grassland would be a real threat. Once grass is established, all hope of cultivation is lost for a good many years. For the time being, at least, it seems wise to let well enough alone— until we can be absolutely sure that a substitute pattern of land utilization would be a genuine improvement over the present one.

## MAIZE

Maize cultivation is basic to Totonac economy, and maize prepared in various ways is the staple food. Except for 10 households (storekeepers; lone women; widows with small children), every family in Tajín plants maize.

The size of the field seems to depend more on convention than upon the needs of the family. Irrespective of the number of individuals in a household, the cornfield pretty consistently is calculated at 1 hectare or 1 *destajo*, which is slightly less than 1.5 hectares; in rare cases, 2 or 3 hectares are devoted to maize, and many families have 2 or 3, or more, hectares of vanilla.

Except for cane and vanilla, which are the two cash crops—cane partially, vanilla entirely—little effort is directed toward producing surplus produce for sale. Transport to Papantla, which is virtually the only market, is not especially easy, and some Totonac think that a more passable road might be a stimulus to greater production. But a good many have a fatalistic attitude, for example:

> In Tajín, there never is any excess of any crop. One may plant more than he needs, but it simply does not yield. This year, Francisco Xochigua planted more beans than he could use, expecting to sell them. But he lost the entire harvest. In Plan de Hidalgo and Plan de Palmar, the economic situation is better. Each year those people are able to sell more vanilla than we, and they have such large harvests of maize that they are able to sell it as well.

## KINDS OF MAIZE

The Totonac recognize several distinct kinds of maize, classified broadly by color, but further subdivided on the basis of a number of other distinguishing features. According to informants, the four basic types are: *maíz blanco* (white corn), which is the tortilla corn par excellence; *maíz amarillo* (yellow corn), grown principally for animal feed; *maíz morado* (purple corn), used mostly for maize gruel; and *maíz colorado* (red corn), raised chiefly because of its alleged magical properties. In addition, there are several kinds of mixed colors, which the Totonac consider the result of hybridization.

Sweet corns and popcorns are unknown. Atavistically, all the local corns occasionally produce a basal kernel enclosed by a glume and believed to be possessed of magical properties. Such kernels of pod corn are rare, perhaps one or two grains in a *fanega* of 144 liters.[31]

*Maíz blanco.*—When mentioned collectively, white corn is called kúši, the generic term for maize. Four different kinds are recognized:

*a.* lanqakúši (*maíz grande:* large corn),[32] known also as sakakúši (*maíz blanco;* white corn). Of all the corns, this is the most popular because of its high yield and its general utility. Its weight per volume is considered by some to be greater than that of other corns. This claim, however is disputed. One maintains that the smaller white corn, described below, weighs more. Others say flatly that the difference in weight is not dependent upon the maize, but upon the soil in which it is planted. According to them, corn—regardless of variety—which is grown on clay slopes weighs more than that which is raised on level land. Juan Castro and Nemesio Martínez, local storekeepers who buy and sell corn, calculate that maize grown on an open plain may weigh when thoroughly dry, about 98 kg. the *fanega* of 144 liters; the same seed,

[31] A specimen of such a kernel was submitted to Dr. Paul C. Mangelsdorf, who writes (letter of August 9, 1948): "This grain of corn is of considerable interest . . . for it undoubtedly represents true pod corn."

[32] The large white corn is described by Dr. Edgar Anderson as a "fairly tropical cylindrical white maize. This is the commonest commercial type in eastern Mexico and is widely grown elsewhere . . . It is in the same general class with such varieties as 'tampequeño' and is in my opinion a high derived sort."

planted on a clay slope, will weigh as much as 115 kg. Although in Tajín, maize is sold by volume, in Papantla it is sold by weight; accordingly most Totonac farmers select hillsides for their maize fields.[33]

The ears of the large white corn are said to average about 25 cm. in length; "the largest ears are produced in the center of the field," not on the periphery. The grain is considered slightly "sweet," but the sugar content evidently is not sufficient to produce the marked wrinkling which is characteristic of sweet corn.

Informants report that typically the ear of the large white corn is not completely covered by the husk, and a slight gap at the tip permits both moisture and weevils to penetrate.

A further peculiarity of this maize is that, invariably, although only white seed be planted, the harvest is mixed with red. As will be seen below, informants recognize three different kinds of red maize which appear unsolicited in their fields of large white corn.

The large white is said to have replaced, in considerable measure, the smaller white described next. We were unable to obtain a time estimate or a statement concerning the provenience of the larger, now more popular white corn. Replacement is far from complete, and a number of Tajín farmers still cling to the supposedly older white corn, with smaller ear.

*b. laksukúši* (*maíz chico:* small corn), aksukúši (*maíz chiquito;* very small corn). This white maize[34] is best described by comparison with the preceding. The ear is smaller (ca. 15 cm.) and is well sealed by the husk, as a consequence of which it is better protected against both moisture and pests. While the large white maize is said to be slightly sweet, the small type is tasteless (*simple*). It requires less moisture and yields better than the other in time of drought; also, it matures 10 to 15 days earlier than the large white. As noted above, it is said to be more ancient in Tajín than is the larger variety.

In sharp contrast to the latter, the small white corn does not produce red maize. "If one plants all white seed, the harvest is unmixed, unless the field happens to be near one in which red is planted" (cf. ftn. 38, p. 104). Since the red (iłkón) is believed to protect a field from damage by "wind, sun, and eclipse," a good many people deliberately mix a bit of red seed when they plant the small white.

*c.* pá¢it. This maize is distinguished from the preceding white forms by its purplish leaf and cob. Its kernels are white and the ear is said to average in size about the same as the large white. It ripens the same time as the latter.

Like the other white corns, pá¢it is a general utility maize. It is said to be extremely common in adjacent San Antonio, and its popularity in Tajín appears to be on the increase during the past 2 years. This may be because pá¢it is said to have greater resistance to weevils than have other white corns. One informant favors pá¢it because its husks are unusually large and therefore are useful in wrapping cakes of brown sugar.

*d.* aksukúši páspula (*desgrana caminando;* evidently descriptive of a corn whose grains are removed with great facility). One informant describes this as a "thin white corn, of small ear, with the kernels loose on the cob." The cob also is "thin," and the grains "pointed and narrow." We have not been able to obtain a specimen of this white maize, which appears to be unknown to most informants. Some years ago, Domingo Santiago grew this corn, planting seed which he believes came indirectly from Agua Dulce. However, 4 or 5 years ago, he ceased planting, and as far as we could determine, this maize no longer is grown in Tajín.

*Maíz amarillo* (šašmoku ʔkukúši, smukukuši; smukuku, yellow).—Yellow corn[35] is planted by relatively few families in Tajín. It is grown chiefly to fatten hogs but also may be fed other livestock. Because "the people want to eat white tortillas," yellow maize is disdained for human consumption; one informant considers it intrusive from the highlands.

*Maíz morado* (laqá¢it).—This is a purplish-red maize,[36] sometimes called black (*negro*), which is used almost exclusively for the fermented gruel known as *atole agrio* (sour gruel). If this particular maize is not available, atole, either fermented or otherwise, is made of white corn. Purple maize is not used for tortillas; some women say that "they

[33] We asked why maize grown on slopes weighs more and were told that it is "because the soil is hard." Some say that the best soil for maize is yellow in color. We collected samples of soil from several fields but have not found anyone to make analyses.

One informant maintains that for summer planting a slope is preferable, because of the rains; for winter planting, he prefers low, level land.

[34] Dr. Anderson writes that "from the look of the ear . . . I would suppose that in part it traces back to the early-maturing, small-eared sorts of the Isthmus, which Hernández originally collected under the name of 'Zapaluta chica.'" He adds that if the "little white has very much 'Zapaluta chica' in it, this should show up to some extent when I grow it next summer."

[35] Dr. Anderson's comments follow: "Cylindrical ear; no husk compression; smallish cobs; white cob; colorless pericarp; colorless aleurone. Deep yellow endosperm; light capping of soft starch to a small, regular dent. No pointing. Undoubtedly traces back to deep yellow, few-rowed varieties. Its vitamin content is really higher, and probably it would be better for the Totonacs if they fed it to themselves as well as to their animals."

[36] With respect to the 1947 specimens of *maíz morado,* Dr. Anderson notes that the ear is "cylindrical to slightly tapered; mostly with red cob; all with red pericarp (P); aleurone colored and colorless; white endosperm; more or less colored in the hard portions (a curious character); denting slight or none; no pointing; kernels small and tending to be isodiametrical."

A larger sample was collected in 1948, and Dr. Anderson reports that it "is all clearly with a white cob, colorless pericarp and colored aleurone. It is of the same general type which is widely used in the back country for elotes, for sweet *atole,* and very probably for alcoholic beverages. As is frequently the case, it averages lower row numbers, narrower kernels, and flintier kernels than the other varieties with which it is being grown. Of the 17 ears in the collection, 8 had 12 rows and one only 10 rows, while in the sample of red corn less than a quarter of the specimens had 12 rows."

would be very dark"; others state with simple finality that they have never seen a tortilla made of this corn. Although fowl refuse to eat *maíz morado* (*sic*), it is fed to hogs and to horses.

It is said that "some plant only white corn, but most plant a little *maíz morado* for gruel." The seed never is mixed with the white, and purple corn invariably is sown in separate rows, generally along the edge of the field. Agapito Pérez plants 3 liters of this maize, which he considers sufficient for the atole requirements of his family of three adults and a child.

Several subclasses of *maíz morado* are recognized by Modesto González. In the paragraphs below, his comparisons presumably refer to the large white corn described above.

*a.* laqá¢it (*maíz ciego*, blind corn). In the field, "this corn looks like the white, but the stalk and the ear are somewhat thinner." The husk may be either white or reddish. The harvest is mixed, with some white and some purplish-red ears. The cobs also are of either color. However, atole made from this corn is "purple" (really a sort of mulberry color).

*b.* šʌ¢i¢áqat-laqá¢it (black laqá¢it). The cane, leaf, blossom, and husk are identical in color with those of white corn, and the ear is the same size. The grain is larger, but "the color of the atole does not turn out well; it is not purple." This maize is used for fermented gruel, but "the people do not like it very much."

*c.* snu·nkut-laqá¢it (orange laqá¢it). In the field, this corn is recognizable because "the ear is short and small, and the stalk and leaf are thin." Nevertheless, in color, it is indistinguishable from the white corn. Gruel made from it is "purple."

*d.* pa·¢ít-laqá¢it (purple laqá¢it). This name is given "because the husk, stalk, flower, and cob are purple"; and the leaf has a thin line of the same color down the middle. The ear is smaller than that of the white corn. Atole of this maize is "purple"; and for good measure, some cooks add a bit of the husk to intensify the color.

*Maíz colorado.*—At least three different kinds of corn are considered red by the Totonac. For two, our data are scanty, but for the third, they are full. Curiously enough, the latter red maize (iłkón) is not eaten by humans and seldom by animals, yet it is found in most of the fields because of its alleged magical properties. Supposedly, it protects the other maize from damage by "wind, sun, and eclipse; it is the father himself, the chief of the corn" (*el mero padre, el jefe del maíz*). Moreover, it is considered a remedy for whooping cough and other maladies.

*a.* iłkón. This red maize[37] is said to appear spontaneously in fields in which the large white corn is planted. Although the seed be all white, invariably the harvest will include some red ears. However, if the small white maize is planted, kernels from two or three ears of red are mixed with the seed, for the small white does not produce red spontaneously.[38]

Although it is steeped with lime, as are the other corns, it is said that the skin of the iłkón cannot be removed. Accordingly, the dough is "bad" and is, moreover, red. "The people want only white tortillas," hence iłkón is not used for maize cakes. Nor, as a rule, is it prepared as gruel, although sometimes a small quantity is mixed with white corn for this purpose. Some affirm and others deny that it is eaten by fowl; all agree that it can be fed hogs and horses; however, it is believed that "a pig will never fatten" if fed iłkón.

The plant and that of white corn (presumably the large white) are said to be identical in appearance. But when the field is dry, the husks turn slightly reddish. Therefore, until late in the season, there is no way of distinguishing iłkón from white corn, without stripping the husks from the ear. According to local reports, "the red corn is that which has the largest ear, that which weighs the most . . . it is the king of the ears."

*b.* toqoqkúši, ¢o¢oqokúši. This is another red corn which appears spontaneously in a field of large white. The pigment is said to be confined to the skin, which is removed when the grain is steeped in lime; accordingly, this particular red corn is satisfactory for tortillas. A specimen sent Dr. Anderson is described by him as similar to "a

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[37] Concerning iłkón, Dr. Anderson writes: "All with red cobs and red pericarp, coloring which is due to the gene P. In various ears of the collection, this color varies from deep red to a light terracotta; the differences are partly due to maturity but are probably even more affected by various alleles of P. As a whole, the corn is like a tropical cylindrical dent, aside from a tendency to shorter ears, pointed kernels, and more tapering ears. The population diagram suggests a mixture of tropical cylindrical and Mexican pyramidal.

"Unlike the color of the purple corn, this pericarp color does not show in the embryo, consequently a white ear which has been pollinated wholly or in part by this red corn gives no indication to the farmer that a cross has occurred. Yet when these white kernels are planted, at least one half the resulting seedlings will bear red ears. Their pollen of course will help to carry on the trait for still another generation. These genetic facts help to explain why red (P) and variegated or mosaic red, though seldom characterizing a variety, are nevertheless so frequently met with in fields of white corn in Latin America. Once the red has mixed into a white variety it cannot be rogued out merely by inspecting the seed ears. However, it is so frequently said to have magic properties that deliberate seeding of a few red grains is probably fairly common in plantings of white varieties."

[38] In time, this practice probably will disappear because merchants in Papantla refuse to purchase obviously mixed corn. Owing to this pressure, two of our acquaintances in Tajín no longer mix red seed with their small white.

Moreover, one informant says that although the red iłkón does not appear in a field of small white, there is a lighter colored red corn which does crop up spontaneously. Since its pigment is confined to the skin of the grain, it may be used for tortillas. This light-red maize was mentioned by only one informant; we do not know its Totonac name, nor do we have specimens.

tropical cylindrical, aside from its color, which seems to be a very weak allele of P."

*c.* lakakíči, lakakíčis (laka, *cara;* kíčiš, *arriera;* ant's face). This maize is variegated,[39] but informants class it with red corn. The name, of course, refers to the markings. Like iłkón, this maize appears unsolicited in a field of large white corn. We neglected to inquire if it protects the fields against the elements and if it is of medicinal value.

Concerning its utility opinion is divided. One informant maintains that it is eaten only by animals, because tortillas made from it are "dark." Another says that the skin is removed successfully with lime, and, since the grain inside is light in color, the corn is acceptable for tortillas.

*Mixed colors.*—In addition to the four basic colors described above, the Totonac recognize a series of mixed colors, as follows:

*a.* čálan, or *maíz pinto.* This is believed to result from the crossing of white, yellow, and "purple." As far as we know, nobody in Tajín makes a practice of growing this corn, but it is said that if *maíz pinto* is planted, the harvest will be "pure white, mixed,[40] and a weak red."

*b.* kólon. This is described as a "spotted" corn which results when white maize is contaminated by red. "From the white maize come certain ears which have hard, brownish grains which look rotten. But they are not. If one cuts them, they are white inside. This maize is called kólon."

We have seen only one ear, which was so obviously defective that we did not collect it. The ear was dwarfed and the grains a curious light-brown color. Needless to say, this maize is not planted, but appears occasionally as a sport or as a diseased form; according to one informant, it crops up most frequently in a field of small white corn.

*c.* iškálni *dios* (*sangre de dios;* God's blood). Allegedly, this is another result of a cross between white and red (iłkón). The kernels are said to be striped, as though smeared with blood.

*d.* Still another mixed corn[41] has, according to informants, no name, either in Totonac or Spanish. When planted, the resulting maize is mixed, with some ears white and others spotted (*pintitas*).

This exhausts, as far as we know, the corns planted in Tajín at present. In 1947, we collected a small series of samples, which were sent to Dr. Anderson. He expressed particular interest in the red and "purple" varieties, hence in 1948, our collections consisted chiefly of them. In the meanwhile, it turned out that none of the 1947 specimens was viable, apparently because of overzealous fumigation at the border; but this news did not reach us until the 1948 season was past, and there was no opportunity to replace the samples.

Dr. Anderson's general impressions of the 1947 collection are summarized thus:

As a whole, the collection shows no strong influence from any one place. It is definitely very Mexican, but the Mexican pyramidal influence is as weak as is the Mexican narrow ear. Two of the numbers look like fairly recent introductions from Guatemala. As a whole, the collection looks like average Mexican corn, with significantly more primitive South American influence than any other Mexican collections I have yet examined.

Concerning the 1948 collections, which consisted largely of *maíz colorado* and *maíz morado*, he writes:

As a whole, the collection shows a strong central core of variation around 14 rows, cylindrical ears, big cobs, and rounded butts, with little tendency either to butt compression or to enlarged butts.

And he adds further:

The collection as a whole centers around 14 rows and about grains which are fairly thick in proportion to their breadth. These are very old traits in maize and are not as common in Mexico as they are in South America. Moreover, the variety with the variegated kernel [lakakíči] seems to have the type of variegation which is common in South America but rare in North America. If it is not of this type, then it is a new type. It definitely is not the common type of variegation which is found in most Mexican and American Southwest varieties.

One additional point of general interest is mentioned by Dr. Anderson:

The most important evidence, as far as the history of corn is concerned, is negative. By some route, the big butt, yellow kernel, broad kernel, big shank, 8-row of the Mayan area must have reached the eastern United States. But there is not the slightest evidence that the Totonac had anything to do with this diffusion.

## THE MILPA

The maize field, or milpa (takuč'tok), is a sort of horticultural catch-all. It contains not only corn, but almost every other local cultivated crop.

[39] Dr. Anderson comments: "Variety with variegated pericarp. This looks like the kind of variegation due to the mutable gene $P^{var}$ and not that due to the gene $P^{mo}$, though the latter is common in Mexico and the former is very rare there, though common in South America."

[40] Concerning its mixed character, Dr. Anderson is agreed: "These are obviously rather impure. Ears cylindrical; husk compression in one; large cob; white cob; faintly colored pericarp; aleurone blue or colorless; endosperm white; denting regular shallow; mostly unwrinkled; no pointing. This looks like the wreckage of some old local variety, nearly obliterated by repeated contamination with such commercial sorts as *maíz blanco* [lanqakúši]. It could result from repeated crossings of the atole varieties [*maíz morado*] with commercial white corns."

[41] Dr. Anderson describes this maize as "tapering gently to the tip; large cob; purple cob; crowned red pericarp ($P^{cr}$); no aleurone color; white endosperm; very slight dent; no pointing. In both coloring and shape this is like many Guatemalan varieties and unlike most Mexican. I presume it to have spread out of Guatemala."

When cane is planted on a small scale, it is incorporated in the milpa, but if the quantity is considerable, it is grown in a separate plot. Vanilla is raised in the thickets of *monte bajo* and ordinarily does not share the field with other cultivates, but occasionally there is a scattering of vanilla in the milpa. Usually, a little garden adjacent to the family dwelling has a few fruit trees and an assortment of other useful plants, as well as flowers; but by and large, most of the cultivated plants are found in the milpa. Accordingly, the latter differs somewhat from our usual notions of a cornfield, and several descriptions follow:

*a.* Antonio Bautista made a sketch of his fields for us, a copy of which is shown in figure 8. His drawing is not to scale, but he estimates his milpa to contain 1.5 hectares, his cane field, 1, and his vanilla plantings, 2.5.

The sketch gives a good idea of the relationship between the milpa and the other plantings. Scattered among the maize plants there is a bit of cane, plus four banana trees, one orange, and three cultivated pawpaws. In addition, but not shown in the sketch, there is a plant of sweet manioc.

*b.* A small field belonging to Magdaleno Méndez occupies a steep slope adjacent to his house. It is predominantly given over to corn, which is dispersed, not in rows. In addition, the field boasts two squash plants and (probably one) sweetpotato; three or four mustard plants and about the same number each of beans and of a cultivated legume called *chipila* (No. 91). A few banana trees are dotted here and there. In addition, wild chili, tomato, and another solanum (Nos. 214, 24, 6) have been tenderly preserved in the course of cultivation. The entire assortment is interspersed and gives the impression of complete confusion. In all truth, this miscellany might better be considered a kitchen garden than a milpa, for the family's chief maize plantings are elsewhere.

*c.* Pedro Pérez likewise has two maize fields, a small one near the house, and a larger one, somewhat more distant. The small plot contains a varied assortment, including a patch of zinnias.

His chief maize crop comes from the larger field, situated on the east slope of a hill. Along the crest of the latter, and enclosing the entire field, is a row of banana trees. He is contemplating a shift in crops, from maize to cane, hence has planted the latter between the rows of maize. The cane still is small, but in another year, it will require the entire field.

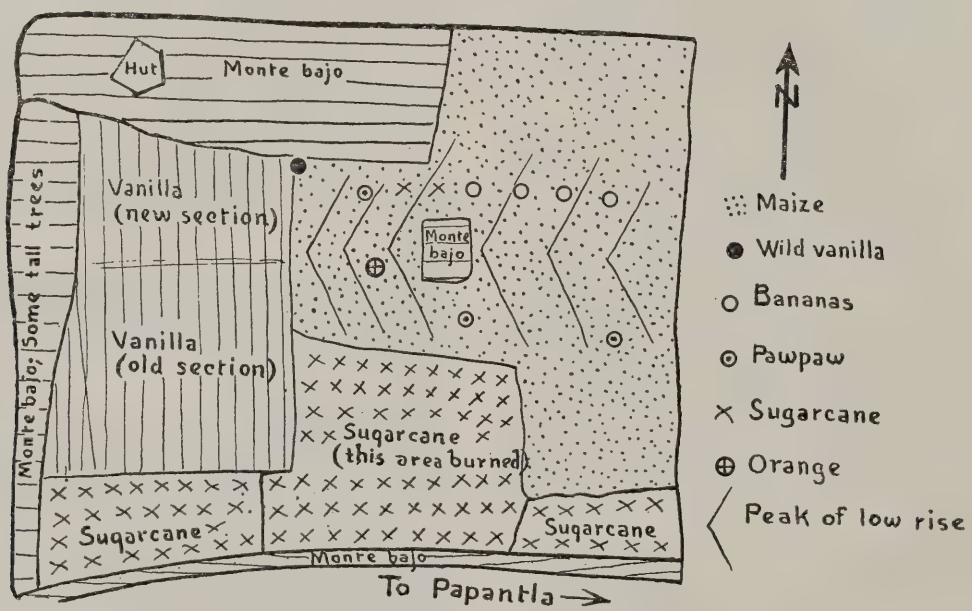


FIGURE 8.—A typical field. From a sketch of his plantings, drawn by Antonio Bautista. We have added the explanation of symbols and have given approximate orientation.

*d.* The field of Rosalino González is on a slope which faces west and its content is more heterogeneous than any of the preceding milpas. A rough sketch of it is shown in figure 9, whose legend indicates what plants are dominant in each section.

Although the maize is planted in rows, the spacing is uneven. The distance between the east-west rows ranges from 0.95 to 1.40 m., and in this uneven strip, beans (*frijol majayán*) have been planted.

Scattered throughout the maize, in no discernible order, are the following:

Cultivates: papaya, sweet manioc, sweetpotato, onion, *cebollina* (related to the onion; literally, "little onion"), garlic, goosefoot (No. 75), mint (*hierbabuena*), and coriander.

Volunteers, spared during cultivation: the *coyol* palm (No. 362) and an annona, both of which produce edible fruit; the chili, tomato, and the solanum mentioned several paragraphs above; and a great welter of other items which, in time, will support the vanilla vine.

Some fields are square or rectangular, but most are extraordinarily ragged in contour, with odd salients here and there. Almost never is a field

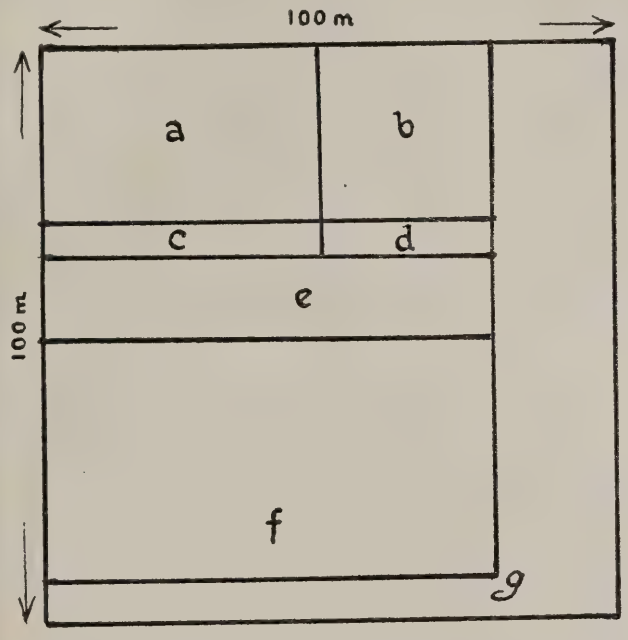


FIGURE 9.—A typical field. Diagram of the plantings of Rosalino González. *a*, New corn, already cultivated; dry stalks of the preceding crop strewn on the ground throughout the field. *b*, New corn, not yet cultivated; dry plants of the previous harvest still standing. *c*, Same as *a*, but with various kinds of bananas planted among the maize. *d*, Same as *b*, with the addition of assorted banana trees. *e*, New maize; scattered over this plot are bananas, sugarcane, *capulín* (not cultivated, but spared for vanilla support), and several vanilla vines. *f*, New maize, mixed with bananas, sugarcane; largely abandoned to *monte*. *g*, Abandoned maize field (*acahual*), now taken over completely by *monte*.

fenced; a fringe of *monte* usually bounds it on all sides and is sufficiently thick to keep out the neighbors' animals.

Two features contribute to the disorder which apparently characterizes a Totonac maize field. One is the fact that corn is harvested twice a year and the plantings generally overlap. It is customary not to clear the old maize before the new is started, and, in a field of young corn, the dry stalks from the preceding harvest (pl. 7, *c*, *d*) still may be standing—occasionally, in fact, may bear mature ears which have not yet been collected. Following the first cultivation of the new field, the dry stalks lie scattered on the ground among the young plants.

A second factor which makes for untidiness is linked with the maize-vanilla sequence of crops. Although theoretically a maize field can be replanted for a good many years, it is customary at the end of 2 to 4 years to convert the milpa into a vanilla field. Accordingly, as the corn is cultivated, care is taken to preserve all plants which, within a few years, will be useful supports for the vanilla vine. The result is that a maize field, although actually well tended, generally is full of volunteer shrubs and small trees, deliberately spared, with a view to future utility, when the shift from corn to vanilla is made.

### AGRICULTURAL IMPLEMENTS

In large part, commercial implements have replaced the native ones. Steel axes and machetes are used to clear the forests, and cultivation is done with a metal *coa*. Nevertheless, the dibble—a simple pointed stick—still survives and with it are made holes in which the seeds are planted.

In the entire community, there is but one plow, a gift to the owner. It sits in dignity on the porch of his house, to be admired by visitors. But this implement never has been used in Tajín and nobody in the community has the slightest idea how to manipulate it. There are, of course, no oxen for draft, but there are mules. The Totonac give various explanations for their want of interest in the plow. One thinks that its use would be costly; another, that "the roots of the trees would impede the plow." Most frequently, it is claimed that plowing might eliminate the very useful volunteer crops of tomato and chili (p. 81). Undoubtedly there is a grain of truth in all these statements.

The first step in clearing land is to cut the lower growth with a steel machete, an outsized knife, of which four different types (p. 246) are current. All are commercial products manufactured in the United States. Two of the types are considered particularly appropriate for clearing land: the *machete de cinta*, for the low bush, the thinner *huaparra*, for higher branches.

Once the preliminary cutting is past, the trees are felled with a commercial steel ax. Next, with a machete, the branches are hacked from the fallen

trees to facilitate burning. These procedures are described in detail in the following section.

Planting takes place on a bed of ashes, dotted with odds and ends of burned timber, and with charred stumps still standing. Manifestly, a plow would be of little use, and holes for the seeds are punched in the ground with a substantial stick (*espeque*, li·čán), pointed at one end. As he plants, the farmer may extract with this dibble the roots of particularly undesirable weeds.

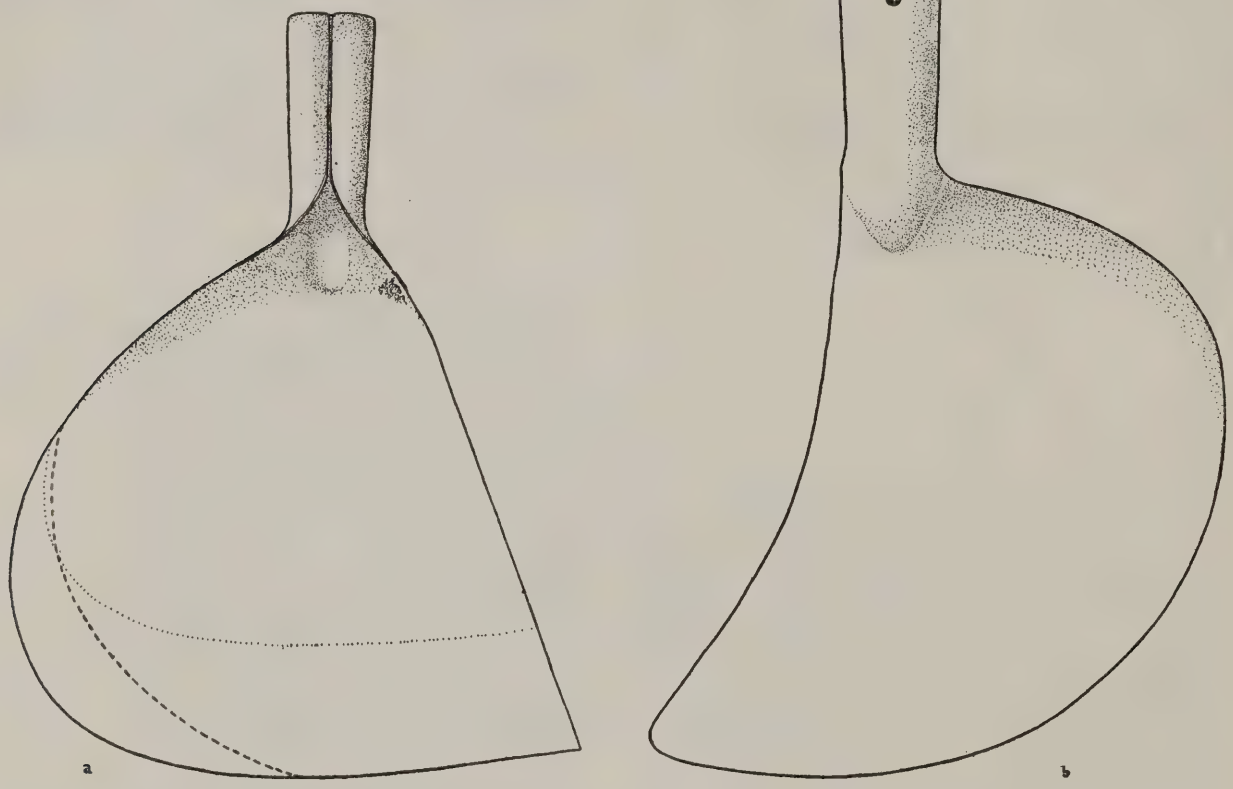


FIGURE 10.—*Coas* used in cultivation. Both of poor quality steel; purchased by us in Papantla. Light dotted line of *a* indicates division between blade and upper parts, latter painted black. Heavy broken line shows where the Totonac have the *coa* cut, for local use. Height of *a*, 35.5 cm.; *b*, same scale.

For a man, the dibble is about 3 yards (*varas*) long; for a woman, 2. So that the wood may dry, the pole is cut about 2 weeks before planting. It is a straight sapling of hard wood—generally of *zapote chico*, *guayabillo*, *huesillo*, or *pimienta* (Nos. 191, 208, 330, 30). Sometimes the stick is salvaged from the field which has been burned for planting; the whole instrument thus is fire-hardened, but it is said that the point alone is not treated by fire. Some protect the point with an iron casing, made to order by a smith in Papantla; if this is used, the dibble may be of any kind of wood.

The *coa* (čana) [42] is the implement used for cultivation. It is a broad, flat metal blade (figs. 10, 11) made in one piece with a sheath into which a long wooden handle is fitted, in the same axis as the blade.

*Coas* sold today in Papantla are of two general forms. One is a broad blade, with an almost straight line from sheath to point (fig. 10, *a*). This type, known as the *tarpala* (palkačana), must be cut down considerably before it can be used locally,

[42] Angel Palerm has noted a suggestive resemblance between the native terms for *coa* and scapula. For the former, Patiño (p. 33) gives chánat; for the latter, chana. An informant whom we asked, says that coa is čana; the human scapula mak čana (mak from maknl, body). This suggests that the prototype of the metal *coa* may have been a hafted scapula, such as is known from native groups farther north.

owing to the profusion of tree stumps and roots in the field. The other type, the *coa de punta*, is somewhat narrower, with a concave curve from sheath to tip (fig. 10, *b*). Both have a cutting edge along the convex side, from the point almost to the sheath. Through wear, the shape is modified and the dimensions of the instrument are reduced. In figure 11 is shown a variety of forms

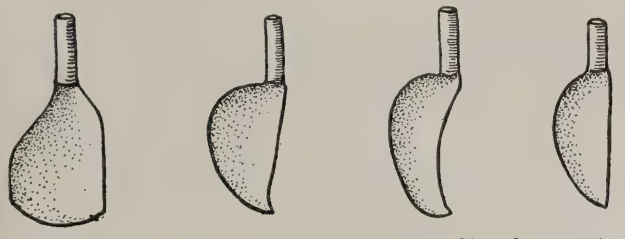

FIGURE 11.—*Coas* used in cultivation. Sketch, not to scale, showing the variety of shapes found among used *coas*.

noted one day among the worn *coas* being used in the course of communal labor.

Theoretically, the *coa* is of steel, but some current offerings in Papantla are of poor-grade iron. Formerly, one lasted 10 years; nowadays, if the *coa* hits a tree trunk, the point may snap or the sheath break. All Totonac farmers complain that the merchandise available at present is of inferior quality. The price ranges from $2.50 to $8.00 pesos; $4.00 is the usual price for one of moderate quality. However, the blades sold in Papantla are too wide for local use, and the Totonac must pay an additional peso to have the instrument cut down to effective size.

### PREPARATION OF THE FIELD

Little virgin forest remains in Tajín, and virtually every new field which is planted involves clearing *monte bajo*. While this name suggests a forest of modest proportions, after 10 or 12 years, the vegetation is of very respectable size. In plate 6, *a*, *b*, a clearing is being made in *monte bajo* which has grown undisturbed for close to 30 years. The timber is impressive, as is the underbrush.

Clearing takes place in April or May, or at the very latest, in June. Even if one is not going to plant until the following winter, it is necessary that the field be cleared during the spring. Otherwise, the felled *monte* does not dry sufficiently to burn. One of the saddest maize fields we saw in Tajín was one which had been cleared out of season. Negotiations for renting the land were protracted and dragged through the summer. Accordingly, the *monte* was cut in October. It did not burn well and the field was covered with half-burned trunks. Before he could plant, the farmer was obliged to "sweep" (*barrer*)—that is, drag a great quantity of loose odds and ends of unburned timber to the edges of the field.

Ordinarily, clearing consists of four steps:

*Rozar* (tampíqanakan).—This name is applied to the first step, which involves cutting the small growth from the forest to a height of about 2 m., or as high as one can reach. All vines, shrubs, small trees, and the lower branches of larger trees are cut. Trees with a trunk diameter of 10 or 15 cm. or more are left standing, for later attention (pl. 5, *a*). Generally, the farmer performs this operation unaided, working with a machete, which he swings much as we handle a tennis racquet—for a cut, a drive, or a backhand.

To clear a *destajo* (ca. 1.5 hectares), which is the usual size of the maize field, one man working daily at normal speed requires about 20 days, if the *monte* is thick; otherwise, 10 to 12 days suffice.

*Tumbar* (ʌaminankán).—The second step, which may follow directly upon the first, is to cut the trees which remain standing. Small trees are hacked with a machete. Inasmuch as the undergrowth has been removed in the course of the initial clearing, there is room to handle the ax, which is required for larger trees (pl. 6, *b*). If a certain tree provides desirable wood, it is cut near the ground; if not, it is chopped at the height of about a meter. Trees are not girdled, as among the Maya (Morley, p. 143).

Ordinarily, one calls upon eight or nine friends to assist in felling. Arrangements vary; generally, some are paid in cash, by the day; others work on the basis of *mano vuelta*, which means that the host is under obligation to give work in return. In the latter case, no money changes hands. Regardless of arrangements, the host provides breakfast and a *mole* dinner for all those who assist. He is not under obligation to furnish supper, although in the afternoon, coffee or fermented maize gruel may be served. The hospitality extended to the coworkers is similar to that described below, for the day of planting, although less lavish.

*Picar* (lʌka·nʌnkán, lakawili?).—The third step is designed to "level the rubbish" so that it will burn thoroughly. If odd branches of the fallen trees extend high in the air, they may escape the fire. They are cut in sections, and trunks also are cut, provided they have fallen in such a position that they may not burn well. In short, the rubbish is slashed in such a manner that it forms a more or less even layer over the ground.

In years of extreme dryness, it is not necessary to *picar*, but generally this step is advisable. The task is performed unaided, or friends are asked to assist. For the combined chore of felling and "leveling," 15 to 18 days are allowed.

At this time, any timber which is to be salvaged is dragged away. Firewood also is cut. Some cut sufficient for their own use; some hire a man to do the job; others cut to sell; still others sell the wood, and the purchaser attends to the cutting.

*Quemar.*—Burning is the fourth and last step. After the *monte* has been leveled, it is allowed to dry at least 2 weeks, generally more, dependent upon the weather. Firing must take place before the heavy rains start, or the debris will not burn.

During these 2 weeks, a belt is cleaned around the edge of the field and all vegetation—green or dry—is removed, so that the fire will not spread to the surrounding forest. A similar clearing surrounds any particular tree in the field which is to be spared—a cedar, for example. In addition, some cut saplings and lean them vertically against the trunk of the favored tree, to protect it from the heat.

When the *monte* is sufficiently dry and when the fire lane has been completed, the debris is burned. Unlike the Maya, who consider a stiff breeze necessary (Morley, p. 144), the Totonac select a windless day, to avoid danger of general conflagration. Fires are started at several spots along the edges of the field, with the aid of corn husks and dry palm leaves.

After the burning, the field is ready to be planted, immediately the rains start. If one delays, subsequent clearing may be required, for the *monte bajo* sprouts with incredible rapidity. The half-burned branches which remain strewn over the field (pl. 5, *b-d*) are, in the course of time, hauled to the house, to serve as fuel. The charred stumps are left in place and the planter avoids them as best he can.

### PLANTING

Once the field is burned and the rains come, the time is ripe for summer planting. The actual day depends upon two factors other than the rain: the religious calendar and the phase of the moon.

The planting season is thought of in terms of the church calendar. For example, one plants following St. Peter's Day (June 29) and prior to the Day of Our Lady of Carmen (July 16), or perhaps even as late as the Day of Our Lady of the Snows (August 5). Within these time limits, the Totonac farmer usually selects for planting the day dedicated to a favorite saint. St. Isidore, generally considered the patron of agriculture, receives scant attention in Tajín, perhaps because he is so strongly associated with the plow.

Moreover, it is judicious to take into account the state of the moon, although there is no general agreement as to which is its most favorable phase. Some recommend planting when the moon is waning, others, when it is full. Some plant 3 or 4 days before the full moon. If one waits until that satellite reaches maximum size, "then it is waning when the field sprouts. In any case, there is a crop, but it may be less plentiful." Most think that the moon has very particular bearing on fruit trees; Modesto González suggests that it is closely associated with the successful planting of vanilla and flowers, such as rosebushes. As far as he can see, his corn crop is the same, regardless of what day he plants.

There are two maize crops a year, and fall planting is governed by substantially the same considerations. Many, perhaps most, plant the Day of St. Andrew (November 30). Lauro Ramírez prefers this date, but last year, because of the moon, he was moved to plant 3 days earlier. The Day of Candlemas (February 2) is considered the latest possible date for planting.

So little time elapses between harvest and planting that the storage of seed presents no problem. The best ears—the largest and the fullest, without hint of malformation—are set aside for seed and are not shelled until planting time. If the crop has been mediocre, an exchange or a loan is arranged with a more fortunate neighbor. Under no circumstances is maize seed purchased outright, "for it will not produce."

Kernels from the tip and the butt are considered unsatisfactory for seed, and the latter comes from the central part of the ear. Before planting, the corn is shelled and is placed with water in a wooden tray (*batea*). If the container is of harder material, such as pottery or metal, the resulting maize crop "will be hard, and difficult to grind on the metate." On top of the soaking corn are stuck two unlighted candles (of the wax of the Old World bee), each supported by a corncob.

The following day, the seed corn is placed in a box lined with leaves of banana or of *papatla* (No. 128), and more leaves are used as a cover. The box is moved to the sun for a day, and with the heat, the corn starts to sprout. When the root is visible, the maize is sprinkled with a solution of creolin or coal oil to protect it from the ants (*hormigas*). In the meanwhile, the candles are moved to the family altar, but they are not lighted until the following day, when planting takes place.

Some plant corn without this forced germination "so that it will endure drought. If the corn is soaked, it may not grow; or it may grow upside down."

Men generally plant the corn. Women are not prohibited from doing so, but "it is not their work; a woman might plant a liter of maize, but she would not plant by *almudes*," that is, on a large scale. The Totonac farmer generally has the assistance of 8 or 10 friends in planting. As in felling, they may work either for wages or on the basis of *mano vuelta;* but they are treated as guests, not as hired hands.

Even though a newly cleared field [43] be littered with half-burned timber (pl. 5, *b–d*), almost invariably an effort is made to plant in rows (*surcos*). Ideally, the distance between the rows is about 1.5 m. This length is measured on the dibble and a scratch or groove is cut, so that the digging stick serves as a measure. A pole may be set up at each end of the field, and the farmer sights across the two, to aline his row. Or a single pole may be stuck in the ground at the far end of the row, and the farmer walks toward it planting as he goes, taking two short steps after each hole opened by the dibble. After the first harvest, planting is simplified considerably. There is less debris in the field, and the dry maize stalks of the previous harvest delimit the rows. The new seed is planted between the rows of the old crop.

If the field has been planted previously, 8 men usually can sow a *destajo* in one day; some, however, reckon 14 men. Nemesio Martínez calculates that with 15 men he can plant 2.75 *destajos* in a day. However, if a new field is involved, because of the time and effort devoted to alining the rows, the work is at least double. This means, not 2 days of work, but double the number of assistants, for planting is completed in 1 day.

If a field is rectangular, rather than square, the rows run the width of the field, not the length, because "the shorter the row, the more likely it is to be straight." If a field is on a slope, planting starts at the lower, left-hand corner, regardless of cardinal directions. The men form a line, abreast, each with his digging stick, and each at the foot of a row. They then proceed uphill, each planting his own row, and the group more or less abreast. There is much sprightly banter, generously sprinkled with conversational obscenity, as each one tries to complete his row first. The planting is not unlike one of our obstacle races, both in procedure and in spirit of friendly rivalry. When all finish their respective rows, the group troops downhill, to what might be called the base line, and planting is resumed.

Holes for the seed are made with the dibble, and undoubtedly there are good many individual variations in the manipulation of this instrument:

> One man holds it in his right hand and gives two or three sharp thrusts with the point. With the first, the hole is opened; with the second, the ground is broken and loosened, using the stick as a lever; with the third, the soil is further loosened, by working the stick from side to side several times. In the resulting cavity, grains of seed corn are dropped from the left hand, and, with the stick, the soil from the same hole is knocked lightly over the kernels. The foot is not used, as among the Maya, and, in fact, the latter seem formerly to have covered the cavity with the stick (Landa, p. 111).
>
> Another Totonac farmer jabs the soil with the dibble, which he holds in the right hand. He then transfers it to the left hand, and, with the right, drops the seed into the hole. He, too, uses the stick to push the earth over the grains. If it has rained little and the ground is hard, the dibble is grasped in both hands. It is thrust into the ground a couple of times, then is worked with a gyratory motion, to loosen the soil.

Maize is planted at a depth of one *jeme* (ca. 20 cm.). Some drop three kernels into the hole; others, four or five; "hired workers may plant six or seven, because they are drunk," as a result of excessive hospitality on the part of the host.

Seed corn usually is carried in a maguey fiber bag which is slung from the left shoulder and hangs at the right side, level with the waist. This bag is a commercial product, manufactured in the Huasteca, and sold in Papantla. It is a recent innovation and has all but replaced the old gourd container (pu·čan), with two holes for suspension and an aperture to admit the hand. A few still use the gourd, which is hung by a cord about the waist, toward the right side. We heard no mention of a seed container made of an armadillo shell, such as Starr (p. 255) describes for the Tlacuilotepec-Pahuatlán area, apparently among either Otomí or Mexicano Indians.

Those who assist in planting are treated as honored guests. In the morning, before breakfast, a *copita* ("a little snifter") is offered each, and the bottle of alcohol (*refino*) is left on the table, so that, subsequently, each may serve him-

[43] A new field is known during the first year as a *roza* (kanan ʔkán); thereafter, it generally is considered a milpa (takuč ʔtok, takúštuk ʔ). Milpa has dual meaning. In the sense just given, it refers to the field where the corn is planted. It may also refer to the maize itself, in which case, the Totonac equivalent is čawɔt.

Planting season, summer or fall, is called čánʌtʔ.

self. Breakfast consists of bread (generally purchased in Papantla, or made locally, by special order), beans, rice, tortillas, and either coffee or chocolate. If the family is in a position to make a special gesture, the chocolate is made not with water, but with milk, which is purchased in Papantla or Tlahuanapa the previous day. Following breakfast, there is another round of *copitas*, and cigarettes are passed.

Thereafter, the party proceeds to the field. Each carries his dibble and, in his magney fiber bag, some of the germinated seed. The balance of the seed is borne by the owner.

About 11 o'clock, the attentive host passes alcohol to the guests in the field. In early afternoon, dinner is served, both preceded and followed by further *copitas*. The main dish invariably is *mole*, made with turkey, chicken, or pork. Rice and *atole agrio* (fermented maize gruel, of "purple" corn) complete the meal. In the late afternoon, coffee is served; "Mauro Pérez is the only one who serves bread both in the morning and the afternoon; in the other houses, one is given only coffee." This may be because his wife is one of the few in Tajín who knows how to make bread and who has an oven for baking it. The calculated costs on the day of planting are given elsewhere (p. 122).

Planting is far from grim. In the house, there is a great bustle, with neighbor women come to give a hand with the preparation of food. The family altar has been decorated, and some time during the day, a religious singer (*cantor*) may come to chant and pray before it (see below).

In the field, a jovial spirit pervades, in part owing to generous tippling. All the men are recently bathed and are dressed in clean clothing, invariably white. This is an obligation, because "*a los que van limpiecitos a la siembra, les sale el maíz limpio; a los chorreados, les sale podrido*"—to those who go clean to the planting, the maize turns out clean (well); to the grubby ones, it turns out rotten (that is, rotted on the ear). Some wear their most festive raiment. Not only is a bright, decorative handkerchief tied about the neck, but one may even adorn the sheath of the machete.

There are a number of ways of contributing to a good harvest. Many believe that a heavy crop results if ears of corn are hung from the rafters of the house, in front of the family altar, and, in a good many homes, such maize is more or less a permanent adornment. In no case, however, does this seem to be the corn used for seed. Never is maize taken to the church or to the priest to be blessed, but in many homes a certain amount of Catholic ritual is associated with the day of planting.

The family altar is decorated with flowers and woven palm "stars" (p. 223–224). On it is placed about a liter of the artificially germinated corn, which is not moved until the maize in the fields is "quite tall," when it is fed to the chickens. Copal incense and candles made of the wax of the introduced (not the native) bee are lighted on the altar, and a food offering is placed on it—for each image, rice, a dish of *mole*, perhaps some bread, a glass of water, one of alcohol (*refino*), and a cup of maize gruel. The food is identical with that which is prepared for those who are to plant the field. "People say that the food on the altar is for the dead; they really mean that it is for the spirits (*ánimas*)."

To be on the safe side, the devout arrange for the services of a local *cantor*, or religious singer the day of planting. He chants a series of rosaries (*rosarios*)—sometimes two, sometimes four, for each of which he charges $2.00 pesos. During planting season, he may be in considerable demand, hence is not always available for an early morning service, which most prefer. In that case, he comes later in the day; "a *rosario* is useful at any hour." Prayers are addressed "not to St. Isidore, but to St. Raphael, or to any other saint in the house." For good measure, a number of rockets are set off.

Sometimes, to insure a good harvest, either of maize or of vanilla, a special mass is sung—for St. Anthony, St. Joseph, or St. Isidore—and a cross is erected on the highest hill near the planting. This involves bringing a priest from Papantla, who charges $25.00 pesos for the simplest mass. The expense is shared by a number of farmers. More commonly, the Tajín planter is content with local, Totonac talent, in the form of the *cantor*. It is said that religious observations the day of planting now are less frequent than they were years ago. Now "some only sow corn; they do nothing else."

No religious services take place in the field the day it is planted, and no sacrifices or offerings of

any sort are made. However, in the sixteenth century, the Totonac of "Cempoala" associated human sacrifice with fertility. When he was deprived of five slaves whom he intended to sacrifice, the chief of "Cempoala" lamented that "all our plantings will be eaten by the worms, destroyed by hail, and consumed by drought, or flooded by the torrential rains because we have ceased the sacrifices" (Mártir, p. 337).

### REPLANTING

Not all the seed grows, and by the end of 8 or 10 days, it is evident how many plants there are to each clump. Accordingly, it is customary to replant (*resembrar*), that is, to add seed to the clusters which are incomplete. For replanting a *destajo*, 4 liters are necessary if there is a considerable deficiency; otherwise, about 3.

Some use dry seed for the major planting, but all think it is advisable to speed germination for the replanting. As before, the seed is soaked. Since the quantity is not great, it is not placed subsequently in a box in the sun, but is wrapped in banana leaves, and the bundle hung from the rafters of the kitchen, where there is sufficient heat to cause germination.

Replanting takes place but once. As before, a hole for the seed is punched with the dibble, but only in the clumps which are incomplete. Despite replanting, the clusters in a mature field are far from uniform, and may have from two to four plants. Since maize generally does not tiller in Tajín, each stalk represents a seed. Occasionally a secondary stalk is produced, but "it is of no use; it is small and ill-formed."

### CULTIVATION; WEED COMPETITION

"Once the field is planted, there is no more to do, except keep it free of weeds"—a chore of major proportions. Both men and women weed (*escardar*), and generally the owner of the field, accompanied by assorted members of the household, works daily at this never-ending task. For example, in the field of Pablo González, his wife, a stepson, and one or more of his three stepdaughters generally are to be found cultivating.

In addition to daily cultivation on a small scale, there are several major weeding bouts during the season. Some have a complete clearing of the field every 2 months; others, once a month. Upon these occasions, about the same number of friends is invited as for planting, and the host is under similar obligations as regards hospitality. Nemesio Martínez, who plants 2.75 *destajos* in a day, with the assistance of 15 men, calculates that the same number of workers requires 2 days to cultivate the same plot. In short, he considers the work is about double that of planting.

Some recommend weeding by hand or with the machete, because "the *coa* may frighten the maize so that it does not grow." All our acquaintances, however, cultivate with the *coa*. With it the weeds are removed, and the soil about the maize is stirred lightly. Never is the earth heaped about the base of the corn, and technically the Totonac do not raise maize in hills.

The *coa* is handled according to a well-established pattern: If it is held so that the side with the blade is on the right of the worker, then the right hand grasps the handle near its upper end, and the left hand is about half way down the stick. However, if the blade is to the left, the position of the hands is reversed. The uppermost hand is the one which exerts most strength, and sometimes the position is reversed, so as to rest the arm; in that case, the cultivator shifts his position in the field and faces in the opposite direction. Regardless, the body is well bent, because to be handled effectively, the *coa* must form a very sharp angle with the soil.

Weeds which are especially troublesome include: *mozote blanco* (No. 325), *coyolillo de ratón* (No. 311), *zacate de venado* (No. 288), *malva* (Nos. 58, 355), *lechuguilla* (No. 93), *sandía del ratón* (No. 360), *berenjena* (No. 60), and the unidentified *hierba del sapo*, and *yerba mala*.

Most weeds simply are sheared off close to the ground. However, grass and certain persistent weeds which do not have very deep roots—*mozote*, *malva*, *yerba mala*, and *berenjena*—are yanked out. They are left lying where they fall and presumably, in time, serve as fertilizer.

However, every man who cultivates a field has tied about his waist a gourd, with two perforations for suspension and with a roughly quadrangular aperture cut for the hand. Into this receptacle he carefully places the seeds of particularly troublesome annual weeds, in the vain hope of eradicating them. It is said that a fiber bag seldom is used "because it might be ripped and the seeds would fall in the field." These seeds are not burned but are tossed into an abandoned maize field (*acahual*, makatáman) allegedly to speed the

growth of the *monte*, so that the plot may be available the sooner for a new clearing. However, what really is desired is the rapid growth of woody plants, not of annual weeds. Aside from the necessity of having the *monte* sufficiently heavy to permit a good burn, it seems likely that in Tajín, as in Yucatán, "tree growth functions primarily in choking out annual weeds" (Emerson, p. 10).

The preoccupation with weeds is such that one very good informant declared that those who enter a field to plant rinse their feet, to avoid carrying unwanted seeds into the milpa. But another, unacquainted with this precaution, was not impressed, remarking loftily that the seeds stick to the clothing, not to the bare feet. Probably for this reason, women who enter a milpa hoist their skirts about their knees.

Apart from annual weeds, the Totonac struggle with the *monte* which, despite chopping and burning, sprouts anew with astonishing vigor. New shoots are slashed with the machete to curb their growth, but *monte* plants are not removed by root.

The incursion of grassland is not a very serious problem locally, and the Totonac are far more concerned with the weeds listed above than they are with grass, although Morley (p. 153) declares the latter to be "the undefeatable enemy of *milpa* agriculture." As might be expected, several grasses are troublesome in the maize field—for example, *zacate fino*, *zacate de elote*, and *zacate salado* (Nos. 352, 353, 363). However, it is said that they do not make serious inroads in a milpa unless the *monte* is removed by root. In that case, they are able to establish themselves and may form a grass covering so thick that other plants have difficulty in penetrating the sod. Accordingly, it is "many years" before the woody *monte* is restored and before the forest is sufficiently large to warrant clearing for a new maize field.

As a matter of fact, this observation concerning the relationship between grass intrusion and weeding by root—made by several Totonac, although not all concurred—may be both valid and of considerable interest. At least, the data presented by Morley suggest that the same situation may hold in Yucatán. There, during 8 years, an experimental milpa was planted at Chichen Itzá:

> For the first four years the annual yield of corn rapidly decreased under the modern method of weeding, that is cutting rather than pulling up the weeds by their roots. The fifth year the experimental *milpa* was weeded the ancient way, by completely pulling up the weeds, removing even their roots. Under this more thorough method of weeding, the yield slightly exceeded even the first year's crop, but lost more than half the next year (the sixth year). It gained again in the seventh year . . . But grass, the undefeatable enemy of *milpa* agriculture, eventually crowded out the bush . . . in the closing three or four years [that is, from the 5th or 6th, through the 8th] . . . grass everywhere invaded this . . . tract of land so that it became more and more covered with a thick grassy mat, through which even weeds, to say nothing of cornstalks, could not push their way (Morley, pp. 152–153).

In short, the incursion of grass more or less coincided with the return to the "ancient" system of uprooting weeds.

Specialists are not entirely agreed concerning the role played by grass in modern Mayan agriculture in Yucatán:

> Steggerda (p. 92) observes that "sod does develop after continued use of a field"; but his report was published before the experimental planting in Chichen Itzá had terminated. When he wrote, the Yucatán milpa still presented no concrete evidence (p. 121). Morley's account presumably brings the sequel to a close.
>
> However, Kempton (p. 3) states flatly that at "none of the places visited either in Yucatan or Campeche does grass seem to be a factor in corn production nor in the reestablishment of the bush"; and he concludes (p. 7) that there "is no evidence that extensive areas of grass land with periodic burning suppress the forest in Yucatán."
>
> Emerson (p. 4) agrees that even "in very recently abandoned milpas little grass is seen, except in the extreme northern and western parts of the area [of Yucatán] visited. Here the many large henequen haciendas, in which the brush has been kept cut for ten to fifteen years, apparently return to bush less rapidly when abandoned and more grass is seen."

These observations apply specifically to modern Mayan agriculture, in the course of which weeds are not uprooted but are cut with the machete. The crucial point here seems to be whether Morley is justified in stating that the "ancient" way of weeding was to extract the weeds by the root. He cites no authority; but, if he is correct, it seems possible that the old system of Mayan agriculture opened the way to grassland and thus carried within it the seed of self-destruction.

### PESTS AND OTHER CROP HAZARDS

Weed control is not the only problem which besets the Totonac farmer; birds and other animal pests also cause their share of worries. Some

Totonac go daily to the field, especially when the corn is young, to frighten the birds with rockets or with stones. This is the particular responsibility of the small boys of the family.

The *papán* (Appendix D, No. 25) is one of the worst pests. "It is a large bird that comes to the field and destroys the tassel; one must cut it so that another will form; otherwise the plant does not produce. Woodpeckers also destroy the tassel, as well as the young ears. Both these birds are killed with firearms; a trap is no good, because they do not light on the ground."

A scarecrow (*espantajo* [*sic*], limakáksan, limakáλan) also is used. Nowadays it is no more than two sticks set up in the form of a cross, with an old shirt draped on them. "Formerly scarecrows were made of corn husks, with arms and legs; on the head they put a hat." Or: "The grandfather of Matías Pérez used to make scarecrows in the form of a doll, out of dry banana leaves. He put a hat on the head and hung the figure in the field, from a tree or a long pole." From memory, Modesto González has drawn one of these figures, complete with headgear (fig. 12). Nowadays these works of art are scarcely remembered. As one lad says, "we no longer use them; I think the birds learned that they do no harm."

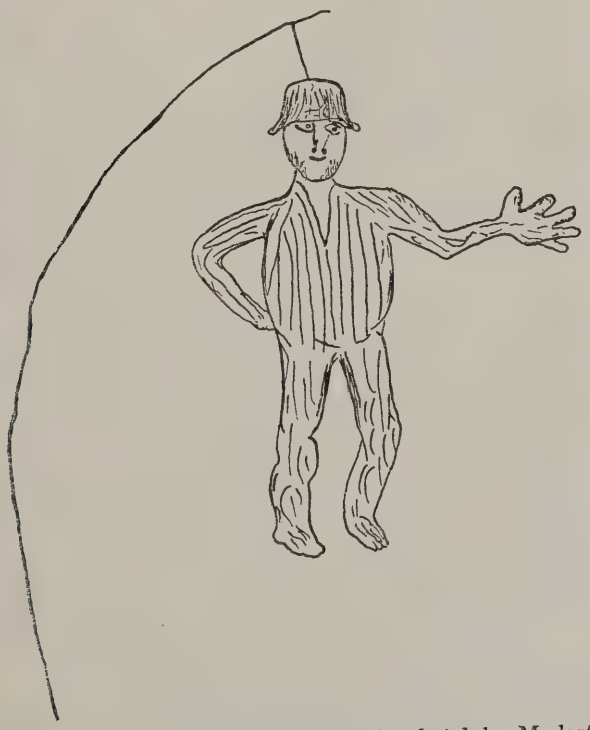

FIGURE 12.—Scarecrow. Tracing of a sketch by Modesto González, showing the type of banana leaf effigy used formerly in Tajín.

Traps are set for prairie dog intruders, or poison is bought for them. Squirrels and skunks are killed with a shotgun. Sometimes dogs assist in dispatching a skunk, but not all dogs will tackle one. A skunk may be killed also with a machete. To kill a fox or a raccoon, various dogs are required.

Natural phenomena—wind, drought, excess rain, hail, and eclipses—all take their toll of crops in Tajín. In March and April, strong, dry winds may break the maize plants. The corn itself announces the imminence of such a wind: "Yesterday the maize was sad and withered; today we have a dry north wind." When the plants are about to tassel, the wind may frighten them so that they do not produce. To avoid this disaster, one informant recommends blowing lustily in the field, using a cow's horn as a trumpet. Others form a series of crosses with ashes, to calm the wind. And, of course, the red corn which is growing scattered throughout the field is supposed to give further protection.

Drought is a recurrent problem in the spring, and sometimes the crops are literally lost—not only maize, but vanilla as well. Again, the red corn is supposed to protect the field, this time from excessive sun. The farmer does not rely exclusively on its power, but he generally lights a candle to St. Joseph, the Virgin of Guadalupe, or to the image known as the *Santo Entierro*. Moreover, each year, the community requests the loan of a miraculous figure of St. Joseph, from a neighboring settlement. The saint is well received and well entertained, and most of the dance groups give performances in his honor. If he is pleased with the reception, he is expected to intervene and bring rain.

When all else fails, the archeological stone idols are invoked. Those found in the fields are kept in the houses, generally on or beneath the Christian altars. In case of emergency, they are bathed, in an effort to produce rain. Some people carry jars of water to the archeological site and dash it over the large stone figure in front of the main pyramid. The treatment is continued until rains come; and if constant recourse is had to the idols, the rain generally is accompanied by strong winds.

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Occasionally, excessive rain damages the fields. To halt the downpour, a palm which has been blessed on Palm Sunday is lighted and the house smoked with it; or the little pestle of the receptacle in which sauce ingredients are ground is placed on the hot coals. Hail sometimes falls in April and slashes the leaves of the corn, but usually the harvest is not affected; we heard of no technique for mitigating the effects of hail.

An eclipse, of the sun or of the moon, is bound to damage the corn, while its effects on vanilla, chili, and fruit trees are even more devastating. Concerning eclipses, there is considerable confusion and informants tend to attribute to them any crop failure for which there is no obvious cause. Most Totonac are fully aware of the dates of eclipses, because they are listed in the indispensable household almanac known as the *Calendario Galván*. One informant's statement may be regarded as representative:

> Now the ear of corn is about to dry; soon it will be ready to harvest. But I open the husks. Outside the ear looks well, but inside there are worms. It was an eclipse. There is the chili field, but the fruit is dropping. It was an eclipse. There are eclipses for corn and eclipses for chili. The one which we had was for corn, but that of next August will be for chili.

Against eclipse the chief protection for the corn is the red maize. For other cultivated plants, a red rag set up in the field or attached to the fruit tree is considered effective.

### HARVEST

In a favorable season, the maize grows tall and luxuriantly—to a height between 3 and 4 m. As the ears begin to dry, they bend downward on the stalk with their own weight. It is said that some who plant on *tierra de vega*—of which there is very little in Tajín—deliberately bend the upper half of the stalk, together with the ear, for protection from birds. This is not good Tajín practice, and a local farmer disapproves, saying that with such treatment "the grains are very thin."

On the whole, local maize seems slow to mature. Informants vary widely in their estimates and, by and large, they are quite unable to calculate the number of days which lapse from planting until ears are sufficiently ripe to be prepared in the form of *bollitos*. However, every man knows what day he plants and generally he can give an approximate date for cutting the first ears. Even with these two relatively fixed points, estimates vary widely.

All, however, agree that the small white corn ripens 10 to 15 days sooner than does the large white; some informants include yellow corn in this early-ripening category. All likewise are agreed that, irrespective of the kind of seed involved, maize planted in summer ripens sooner than that planted in winter. The summer planting of the large white maize may produce in the course of 90 to 120 days, according to different informants. The range for winter planting is about the same, but more individuals give a higher figure.

By and large, summer planting (usually July 16) produces corn for *bollitos de elote* (p. 153) by All Souls' Day (November 2). And winter planting (usually November 30) provides edible fresh ears by early or mid-April. By the Day of the Holy Cross (May 3), corn is sufficiently dry to be prepared in the form of tortillas, provided the store from the previous harvest is exhausted and it is necessary to dip into the new crop.

The very first young ears are made into gruel (*atole*). Later, as the kernels become somewhat harder, the ears are roasted or the maize is prepared in the form of *bollitos*.

There is no first fruits or harvest ceremony. "We merely eat the corn; we give thanks to no one, and we light no candles." Modesto González was frankly astonished by the Huastecan practice, described to him by Roberto Pavón, of burying the first ears in the field. Nor is there any counterpart of the old Huastecan custom of smoking with incense the tamales made of new corn (Tapia Zenteno, p. 107). Furthermore, there is absolutely nothing to suggest the elaborate ceremony—not precisely a harvest ceremony, but certainly one strongly linked with fertility—which Starr (pp. 252–253) describes in some detail for the Totonac of Santa María, near Tlacuilotepec.

The new maize is collected gradually, over a period of weeks; little by little, it is brought from the field, as needed. In part, for this reason, most Totonac are surprisingly vague concerning the actual amount harvested. Many from *pura flojera* (sheer laziness), we are told blithely, allow the ripe corn to remain in the field a considerable time. For example, in April, Antonio Bautista was just getting around to gathering the last of the maize which had ripened the previous December. How-

ever, "it is not well to leave the corn in the field over a month, for it may be stolen, or the plants fall and the ears rot." The heavy rains may start before the summer harvest, and between rain and wind, many stalks are knocked down. The ears on the ground are collected first, or they sprout.

The general harvest takes place following a few days of sun and with the assistance of "a few friends," generally four to eight for a *destajo*. Again, the men work either for pay or on the promise of return assistance, and, as usual, the host is under obligation to feed the workers.

In harvesting, the ear is grasped in the hand and is twisted slightly to free it from the stalk. The ears are collected in small heaps scattered over the field and then are taken to a temporary shelter in the field, usually thrown together of palm. Invariably, maize is hauled on the back, in large commercial sacks; baskets are not used in harvesting, as in many parts of Mexico.

Both men and women gather corn and haul it to the granary. Formerly, the latter was built in the field, and the family drew on the stock from time to time. However, some fields are far removed from the dwelling (p. 61), and the neighbors likewise developed the habit of drawing on the cache. Now it is considered "more convenient" to store the corn in or near home base. The maize is collected in the temporary shelter until there is opportunity to transfer it to the more permanent granary at home. While the crop remains in the hut in the field, the owner generally stays on guard during the night. Granaries are described elsewhere (p. 203).

No husking pin is used. Maize is stored with the shuck and the latter is not removed until the corn is to be used—to eat, to sell, or to plant. Without the protective covering, the weevils soon infest the ear. Maize is shelled only as needed, a small amount every few days, with the assistance of the children. Generally the kernels are removed with the hands, holding the ear in one hand and twisting it slightly while, with pressure from the other hand, the rows are broken off and the kernels fall into a wooden tray or some other container.

A few use an *olotera* (*olote*, cob) for shelling. This consists of a large number of cobs alined vertically to form a disk, about the circumference of which a wire is tightly wrapped. Against the disk the ears are rubbed to remove the grains.

The dry stalk and leaf are left in the field to rot; they are not used as fodder, although the tassel often is cut for the animals. The cob (*olote;* in Tajín, usually *bolote;* šapásma) is used as fuel. The corn silk is put to no use, save that of the red maize, iłkón, from which a remedy for diarrhea is prepared.

The green husk from young ears is eaten by the animals, and the dry husk (*totomoxtle*, iškám) has many uses as a wrapping material.

### PRODUCTION, LABOR, PROFIT

For a variety of reasons, it is impossible to obtain accurate figures concerning maize production. In the first place, during many weeks, corn is cut in the field as it is needed, so that when the general harvest takes place, a relatively large proportion already has been consumed. In the second place, corn invariably is stored on the ear and is shelled only as needed. Naturally, the total volume of shelled corn is known only in very special cases, when the entire crop from a field is to be sold. In short, informants themselves do not know the precise yield.

There is a further complication. A good many families were alarmed by our inquiries and feared that taxes might be raised if they appeared unduly prosperous. However, they responded frankly and in great detail to questions concerning the daily consumption of corn; likewise, to queries concerning the amount bought and sold. Apparently none realized that these data, calculated on the basis of the 6 months required for each harvest, would give a fair check on production.

In a number of cases, the alleged yield is only a fraction of the declared consumption. For example, the total maize requirements for one family, during 6 months, cannot be less than 12 *fanegas*. By their own statement, they purchased only 2 *fanegas*. Obviously, their field must have produced close to 10 *fanegas*, although they maintained that they harvested only 3. A more extreme case is provided by a family which consumes 30 *fanegas* every 6 months. It claimed to have harvested only 3 *fanegas* the winter of 1946. Of this, a small amount was sold, but the informant was uncertain of the precise quantity. Nevertheless, he artlessly admitted in late spring that the corn

on hand would see his family through to the next crop.

In one case, at least, a marked discrepancy was explained satisfactorily. The informant was shown that his normal consumption exceeded his harvest, despite the fact that he insisted he bought no corn. Eventually, it turned out that he purchased no maize simply because, when the stock was exhausted, his family ate plantains or bananas instead of corn.

Probably most families in Tajín raise sufficient corn for their own consumption—and, at the same time, have relatively little surplus. Concerning purchase and sale of maize, we have information from 34 families (table 10). Naturally, the record is too incomplete to permit much generalization, but it accords pretty well with our impressions. A few families report a deficit each season; others say smugly that they never have to buy corn. Sales exceed purchases, both in total and by family average. Probably the 1946 summer crop is to be considered normal, but most farmers complain that the harvest of the following winter was unusually poor. The latter fact is demonstrated in table 10, the reduction being particularly evident in the sales, which total about one-third of the previous summer.

TABLE 10.—*Maize purchases and sales*

| Purchases and sales | Following 1946 summer harvest | | Following 1946 winter harvest | |
|---|---|---|---|---|
| | Number of families | Liters of maize | Number of families | Liters of maize |
| Purchases: | | | | |
| None | 25 | | 22 | |
| Purchased maize | [1] 7 | | 12 | |
| Record incomplete | 2 | | 0 | |
| Total maize purchased | | 2,232 | | [2] 2,640 |
| Range of purchases | | 96–792 | | 120–576 |
| Average per family [3] | | 319 | | 330 |
| Sales: | | | | |
| None | 18 | | 24 | |
| Sold maize | [1] 16 | | 10 | |
| Total maize sold | | [4] 11,520 | | [5] 3,984 |
| Range of sales | | 144–1,728 | | 24–1,152 |
| Average per family [3] | | 823 | | 569 |

[1] One family achieved the unique distinction of functioning both as vendor and buyer. Through miscalculation, the summer crop was sold in excess, and before the new harvest, 100 liters had to be purchased.

[2] Total, range, and average based on 8 of the 12 families. For 3, the amount purchased was not determinable. The fourth case is special, because the farmer abandoned his milpa to *monte*, hence was obliged to purchase the entire supply for 6 months—in this case, 17 *fanegas*, or 2,448 liters. Inasmuch as this amounts nearly to the sum of the purchases of the other families, it was excluded.

[3] Average per family based not on total number of families, but respectively on those who have purchased or who have sold maize. The average would be far lower if all Tajín families were included.

[4] Total, range, and average based on 14 of the 16 families. One was uncertain of the amount sold. The other obviously was so far outside the normal range that inclusion would warp the situation as a whole. It sold 22 *fanegas* (3,168 liters)—almost double that of any other family.

[5] Total, range, and average based on 7 of the 10 families. Three sold in small quantity (by *almudes*, that is, in lots of 12 liters) but could make no estimate of total sales.

A few of the most prosperous families—perhaps 8 or 10 in the entire community—plant 2 or 3 hectares instead of the usual 1 or 1.5; accordingly, in good years, they are able to sell a considerable quantity of corn. Two such families are included in the list. One sold the summer harvest in such quantity that the sales were deleted from table 10 (footnote 4); however, winter sales were only one-tenth as great and are well within the normal range.

On the whole, most Tajín farmers do not sell maize. Those who do, generally market by the *fanega* (144 liters), but a few sell on small scale, by the *almud* (12 liters). If our sample is representative and if the summer crop is normal, we may say that most families with surplus corn are able to sell about 800 liters, or between 5 and 6 *fanegas* a crop.

Price varies widely, and it is difficult to appraise transactions in terms of cash. When the new crop is in, maize is abundant and cheap; toward the end of the season, it is scarce and expensive. In a single season, the price ranges from $15.00 to $55.00 pesos the *fanega;* probably $35.00 is a reasonable average. However, those with surplus corn usually unload early, at a low price, before the weevils make inroads; and those who do not grow sufficient for their needs feel the pinch toward the end of the season, when the price is high.

Although the Totonac farmer is vague concerning the amount of corn he harvests, he knows precisely how much he plants, for this is measured carefully. However, at the time our census inquiries were made, we were still not aware of the custom of replanting—that is, of planting subsequently to replace seed which has not germinated. As far as we know, the amount of seed reported by informants applies to the main planting only, but because of replanting, the amount actually sown consistently is somewhat greater than our figures indicate. Nevertheless, the liter of seed corn which is left on the family altar compensates in part, and it seems likely that the corn which actually goes into the field is about 2 liters more than our records show.

Concerning seed corn, we have data from 30 families, but not all are usable, for occasionally the informant is unable to guess even roughly the size of the crop, or he does not know the extent of his field. However, for 25 of these 30 families, we can guess at the approximate yield per liter of corn planted.

Unfortunately, because of the ambiguity of measures, the yield per unit of land cannot be given. A milpa is described in terms of hectares or of *destajos*. The hectare is measured by meters and contains 10,000 sq. m. The *destajo* usually is calculated by *garrochas* of 2.4 m.; since a *destajo* is 50 by 50 *garrochas*, it contains a fraction less than 15,000 sq. m. Although the *destajo* is almost half again as large as the hectare, the two terms are used interchangeably in conversation. Some in Tajín deliberately reduce the length of the *garrocha* to 2 m., in which case, the *destajo* and hectare are equivalent. Others do not make this arbitrary correction, yet use the terms synonymously.

As a matter of fact, the amount of seed corn seems to be about the same, whether the field is reckoned by hectare or by *destajo*. For 1 hectare, informants' estimates range from 12 to 24 liters; for 1 *destajo*, from 8 to 24, with one case at 48. Most plant between 12 and 24 liters, which is precisely the range given for the hectare. Nor is there any significant difference in the amount of seed planted in summer and winter. Of 30 families, 3 plant a few liters more in the summer, and 3 plant a few more in the winter; the others sow the same quantity for both harvests.

While in actual practice, the amount of seed allotted to a *destajo* varies somewhat from farmer to farmer, anyone who is asked in general terms usually replies 18 liters, plus about 3 for "replanting." This ratio is so firmly established that sometimes land area is expressed in terms of seed corn. If one inquires, for example, the extent of a certain plot of sugarcane, the answer may be 3 *cuartillos* (9 liters)—meaning that 9 liters of maize would be required to plant the area in question.

For 25 families we have concrete figures of the estimated yield per liter of seed corn, as given below. Both harvests are from the year 1946, and in most cases, from precisely the same field.

| *Summer* | *Winter* |
|---|---|
| 20 | 18 |
| 24 | 120 |
| 28.8 | 76.8–96 |
| 36 | 21.3–24 |
| 36 | 48 |
| 38.4 | 48 |
| 40 | 24 |
| 40 | 24 |
| 54 | 48 |
| 72 | 48 |
| 72 | 64 |
| 76.8 | 76.8 |
| 80 | --- |
| 84 | 48 |
| 90 | 28.8 |
| 96 | 60 |
| 96 | 96 |
| 104 | 96 |
| 115.2 | 72 |
| 120 | --- |
| 144 | 72 |
| 144–156 | 72–96 |
| 144–156 | 72–96 |
| 216–240 | 240 |
| 252 | 252 |

Naturally, in such a small series, the yield varies widely. Some of the fields are new, hence presumably more fertile; others are on the point of being converted into vanilla plantings. In some the drainage is good; in others, not. Some are planted to the large white corn, considered of high yield.

Even so, the variation is extraordinary. For the 1946 summer harvest, the estimated yield per liter of seed ranges from 20 to 252 liters.[44] For the winter harvest, the range is about the same, from 18 to 252 liters. In 15 fields, the yield was less in the winter; in 3 it was the same; in 5 it was higher. Generally the summer harvest is considered the better and most regard the 1946 winter crop as unusually poor "because of too much sun and wind." Those whose yield increased presumably planted on relatively low, level land, with poor drainage—terrain which produces well only under special circumstances.

Obviously, the only way to obtain a reliable record is through a series of controlled plantings, over a period of years. Even allowing for a very

[44] For 1947, we have data from the field of Santiago Simbrón. Both his summer and winter harvests show a yield of 156 liters per liter of seed, despite the fact that he has grown maize continuously on this same plot for the past 7 years.

wide margin of error, the above figures suggest a tremendous range in productivity, not only from one field to another, but in the same field, from one season to another. For reasons which will be evident later, it seems likely that the yield per liter of seed generally is at least 100 to 1.[45] The lower figures probably represent bad guesses, special circumstances, or, in the majority of cases, a deliberate effort on the part of informants to conceal the productivity.

As a check on the preceding data from individual families, we have information concerning two fields which have been planted under more or less controlled conditions. One is a field tilled by communal labor, for the benefit of the school; the other is a field that is planted collectively by about a dozen men, as a commercial enterprise. In both cases, the amount of seed corn is known, and, since the entire crop from both fields is sold, the total yield likewise is well known. We are indebted to Juan Castro for these data, which are summarized in table 11.

At this point, some supplementary data may be added concerning the cooperative. The original group consisted of 13 men; before the first harvest, 2 withdrew, after having been paid for their labor and reimbursed their advance on the rent of the land. Some 7 hectares were rented on the Tajín-Tlahuanapa border, within the limits of the latter community. Of this, about a third was placed under cultivation, and measurements taken by José Luis Lorenzo, of our group, indicate that the field proper contains 2.3 hectares. This land is considered fair for corn but would be better if it had a more pronounced slope.

Clearing was completed too late to plant maize, and as a filler, beans were grown—with little success, however, since Tlahuanapa cattle apparently harvested more than did the cooperative. The first maize was planted in the summer of 1946, and the data below apply to the first crop, that is, to the winter harvest of 1946. Accounts were kept by Francisco Abundio Xochigua, the former school teacher, now deceased, who very kindly permitted us to copy his records.

He places the borrowed seed corn at 3 *almudes* (36 liters), not at 3.5, as does Juan Castro (table 11) for the two subsequent plantings. If we assume that this seed was returned, the accounts indicate a crop of 3,594 liters. As a matter of fact, the harvest probably was somewhat greater, for in the final financial settlement, of April 1947, adjustments were made which indicate that individual members purchased from the collective stock $115.50 pesos of corn more than is noted in the body of the record. Roughly, this is equivalent to 462 liters, which probably should be added to the yield, giving a total of 4,056. This is approximately 113 liters for every liter of seed corn—or about 1,763 liters (12.2 *fanegas*) for each hectare. In a good season, the Totonac farmer expects close to 15 *fanegas* a hectare.

TABLE 11.—*Maize yield from two fields* [1]

| Item | School field; 3 successive harvests pooled (winter, 1946; summer, winter, 1947; 1st, 2d, 3d crops) | | | | Cooperative field; 2 successive harvests pooled (summer and winter, 1947; 2d and 3d crops) | | | |
|---|---|---|---|---|---|---|---|---|
| | Hectares | *Almudes* [2] | Liters | Pesos | Hectares | *Almudes* [2] | Liters | Pesos |
| Size of field | 3.3 | | | | 2.3 | | | |
| Seed, each planting | | 5 | 60 | | | 3.5 | 42 | |
| Estimated total seed | | | 180 | | | | 84 | |
| Total yield | | 1,801 | 21,612 | | | 849.0 | 10,188 | |
| Yield per liter of seed corn | | | 120 | | | | 121.3 | |
| Estimated yield, per crop | | | 7,204 | | | | 5,094 | |
| Estimated yield, each hectare, per crop | | | 2,183 | | | | 2,215 | |
| Total proceeds from sale of corn | | | | $4,924.66 | | | | $2,976.18 |
| Estimated proceeds, each hectare, per crop | | | | $497.44 | | | | $647.00 |
| Estimated annual proceeds, each hectare | | | | $994.88 | | | | $1,294.00 |

[1] In neither case is the yield particularly high. Through theft, the school lost considerable corn, which is not included in the record. Moreover, members of the cooperative admit that their replanting was inadequate. In neither case should the crop be considered better than average, yet the minimum yield is 120 liters of maize to each of seed corn. The cooperative field shows a slightly higher yield and considerably higher cash proceeds, the latter because the maize was marketed to better advantage.

[2] The original entries are in terms of *almudes*, which we have converted into liters; our calculations are based on the latter unit.

[45] There are comparative figures from Yucatán, where the Maya practice milpa agriculture. There, Morley (p. 147) calculates 9.5 pounds of seed corn per acre. The yield, "in general," he estimates at 17 to 25 bushels per acre (p. 154). Naturally, the weight of maize by volume varies with local conditions, but if we calculate a bushel of shelled corn at 56 pounds (information from Dr. Anderson), the yield is 952 to 1,400 pounds per 9.5 pounds of seed corn. This is, roughly, between 100 and 150 pounds per pound of seed. In short, the Maya and Totonac figures are well in accord.

Dr. Edgar Anderson writes: "In the United States corn belt one counts on a 300 to 350 fold increase per year. I expect that would be the maximum for any area of any considerable size."

This apparently is the maximum yield in a zone where maize production is highly specialized and is, moreover, characterized by the use of scientific methods, modern machinery, and improved seed. On the whole, milpa agriculture does not compare too unfavorably—especially since the Tajín figure is reckoned very conservatively as the minimum yield.

These figures for the first crop of the cooperative show a somewhat lower yield than that calculated for the two succeeding ones (table 11), presumably because the winter crop of 1946 was generally poor.

The same accounts provide the one demonstrable case of the amount of labor expended on a Totonac milpa. Each member of the group received $2.00 pesos for each day he worked. A total of 408 man-days was spent during the year, including clearing, burning, planting, replanting, cultivating, harvesting, and shelling. Presumably marketing also is included, for over half the crop was sold in Papantla.

It must be remembered that the above figure includes labor, not only for the first crop of corn, but also for a preliminary crop of beans. In short, the labor probably is somewhat less than it would be for two full crops of corn, but considerably more than it would be for one. Even if we halve the figure [46] and calculate 204 man-days per crop of corn, it is evident that the Totonac lavish relatively more attention on their milpas than do the Maya. For one group of the latter, it is calculated that a field of nearly 4 hectares [47] is tilled with an expenditure of 190 days of labor (Steggerda, p. 127). In short, the field is very much larger than the one Totonac planting for which we have data, while the labor involved is considerably less. We may say, on the basis of our one field, that labor, undercalculated, amounts to 88.7 days per hectare, whereas among the Maya, it comes to 48 days.[48]

We have no specific figures for the amount of labor expended on the average family milpa in Tajín. The Totonac do not appear to toil unduly, but they do not stint the time spent on their fields. In addition to outside assistance—in felling trees, perhaps in hacking the rubbish to uniform level, invariably in planting, in part of the cultivating, and not infrequently in harvesting—a man cultivates his field almost daily, during the growing season, usually with the assistance of assorted members of the family. If 88.7 days per crop for each hectare is at all reliable—and we think it somewhat low—then the average family field of 1.5 hectares would require about 133 man-days of labor for each crop, or 266 man-days a year. The seasonal distribution of agricultural activities is treated in Part 2, under the heading Work.

Although the accounts of the cooperative are not entirely clear, something can be said of the results of the first harvest in terms of cash. Of the original 13 members of the group, 12 advanced $5.00 pesos apiece to pay the rent; the thirteenth was Don Abundio, who was excused because of ill health and because he was to function as bookkeeper. A summary of his accounts follows:

| | *Pesos* |
|---|---|
| Disbursements: | |
| Rent of land (advanced by members, who later were reimbursed) | $60.00 |
| Bean seed (16 kg.) | 22.00 |
| Labor (408 days @ $2.00) | 816.00 |
| Overpayment to various members, apparently through error | 30.50 |
| Unspecified disbursement | 5.50 |
| Profit ($18.75 to each of the 11 members who remained with the group) | 206.25 |
| Unaccounted for | 60.90 |
| Total | $1,201.15 |
| Proceeds: | |
| Sale of beans (75 kg. @ $1.00) | $75.00 |
| Sale of maize (to members and others) | 1,010.65 |
| Additional sale of maize to members, implied in final settlements | 115.50 |
| Total | $1,201.15 |

Shelled corn was divided into three categories: good (*bueno*), that is, suitable for human consumption; half-eaten (by weevils) (*bueno-picado*), suitable for hogs; and eaten (*picado*), used only for fowl. For each lot, there were two prices, one to members and one to nonmembers. Prices per *almud* of 12 liters were as follows:

| | *To members* | *To outsiders* [1] |
|---|---|---|
| Good | $3.00 | $3.75 |
| Half-eaten | 2.00 | 3.00 |
| Eaten | 1.00 | 2.00 |

[1] The corn hauled to Papantla was sold by weight. It brought 46 centavos a kilogram, which informants reckon as roughly equivalent to $47.00 or $48.00 pesos a *fanega*. In the notebook of the cooperative, sales were recorded in *fanegas*.

The bulk of the crop was sold before weevils made serious inroads. Presumably all the maize sold in Papantla was "good." Of that disposed

[46] This will offset any possible charge that, since the field was cooperative, there was a surplus of labor. As a matter of fact, some members of the cooperative felt that the field had received insufficient attention.

[47] Maya plantings are reckoned by the *mecate*, which is 20 m. square and which therefore contains 400 square meters. The average Maya planting consists of 99 and a fraction *mecates* (Steggerda, pp. 91, 113), which we calculate at 3.97 hectares.

[48] Moreover, the Maya figure includes the time spent in constructing the corncrib (Steggerda, p. 126), whereas ours does not.

of locally, there were 116 *almudes* (1,392 liters) of good corn; 18 (216 liters) of half-eaten; and 28.5 (342 liters) of eaten.

The gross proceeds from the first crop of corn from this field of 2.3 hectares was $1,126.15 pesos, or $489.59 pesos a hectare, as compared to an estimated $647.00 pesos for each of the next two succeeding crops (table 11). The latter is considerably higher than the average of $497.44 for the first three successive crops in the school field (table 11). Since the cooperative obtained only a slightly higher production per hectare than did the school field, the difference lies chiefly in the fact that the cooperative was able to sell its corn to better advantage—in spite of giving its members a special low price.

It should be emphasized that a family milpa is considerably more productive in terms of foodstuffs than either of the fields just considered, since a great many things other than maize are planted in it, without reducing the yield of corn very materially. However, a family field also involves additional cost—that of feeding and entertaining the men who, from time to time, assist the owner.

Modesto González has prepared a careful estimate of the expenditures the day of planting—with 10 to 15 men in the field and about the same number of neighbor women in the kitchen. (The women are fed but otherwise are not reimbursed.) His calculations do not include maize for the atole and tortillas, presumably because a family is supposed to have a stock of corn upon which to draw. He lists individual ingredients of the bread and *mole* sauce, as well as other minute details, and the following is merely a summary:

| | *Pesos* |
|---|---|
| Pork, to accompany the *mole* sauce | $28.00 |
| Sauce ingredients | 10.70 |
| Rice, coffee, brown sugar | 10.70 |
| Bread | 25.50 |
| Chocolate | 6.30 |
| Liquor | 8.00 |
| Cigarettes | 6.00 |
| Pay to workmen (10 @ $2.00) | 20.00 |
| Incense, candles | 4.00 |
| Rockets | 5.00 |
| Religious singer (*cantor*) | 4.00 |
| Total | $128.20 |

This estimate is for "an elegant feast," as Don Modesto puts it, and most families spend considerably less. Yet many serve turkey instead of pork, and that is somewhat more costly.

The above calculations apply particularly to the day of planting. For other occasions—felling the *monte*, cultivating, or harvesting—incense, candles, fireworks, and *cantor* are dispensed with. Also, fare is more frugal. Nevertheless, coffee is served in the morning, and at noon, a dinner of *mole* or of rice and beans. Alcohol and cigarettes are passed, but no further food is offered in the afternoon. Even so, the cash outlay for each family per crop is considerable, and it is evident why only the wealthier families plant corn in excess of their needs. Capital is necessary—in the form of land, labor, and food for the latter.

## VANILLA

Vanilla and sugarcane follow maize in economic importance, but since vanilla succeeds corn in the local crop rotation, it will be treated first.

Vanilla [49] is a climbing orchid, a vine with thick, fleshy stems and leaves. It produces a pale-cream blossom in spring, and by late fall, its seedpod is ready to be cut. It is picked green and undergoes a lengthy drying process, in the course of which it develops a powerful, aromatic fragrance. From the dry, dark-brown pods, commercial vanilla flavoring is derived.

A wild form, known as *vainilla pompona* (*Vanilla pompona* Schiede (No. 23)) also occurs at Tajín [50] and crosses freely with the cultivated form, sometimes accidentally, sometimes by human agency, for, presumably owing to a dearth of pollinating insects, the vanilla of commerce is hand-pollinated.

What little is known of the history of vanilla culture has been summarized by Bruman (1948). There are a number of sixteenth-century references to vanilla, which was used by the ancient Mexicans as a medicine and as a flavoring for chocolate, but there is no indication that the Papantla zone was an early source of supply. Vanilla is not mentioned among the tribute exacted by the Mexicans from the Tuxpan-Papantla area (Colección de Mendoza 5:87; Códice Chimalpopoca, p. 64) and, in fact, there seems to

[49] The vine, blossom, and pod all are called šanat?, the generic term for flower. Unfortunately, our herbarium specimens molded and could not be submitted for identification. It may be assumed that the local product is *Vanilla planifolia*, the vanilla of commerce (Hasselbring and Nash, in Bailey 3:3433).

[50] A second wild form, *vainilla cimarrona* is said to be found "in the mountains." Its flower is described as identical with that of the cultivated plant.

be no mention of vanilla at Papantla until close to the middle of the eighteenth century.[51] A statement by Villaseñor (1:318) implies that vanilla was cultivated near Papantla in the 1740's, but a document dated 1743, published by Bruman (pp. 373–375), states flatly that the vine is wild. It would appear that even as late as 1804, vanilla was of negligible importance at Papantla. A report from that year (Relaciones estadísticas de Nueva España, p. 45) states that the Indians "and the greater part of the *gente de razón* employ themselves in plantings of maize, beans, cane, and chili": it makes no mention of vanilla, although reporting it for Totonac Misantla and Colipa.

Under the circumstances, it seems likely that vanilla planting is a late development in the Papantla area. In fact, it may not have flourished until the introduction of artificial pollination, some time after 1840 (Bruman, p. 372). Early or late, in the Papantla zone today, vanilla production is firmly in the hands of the Totonac. They are virtually the only growers, and in their economy vanilla is of vital importance as a cash crop.

### PLANTING AND CARE

Vanilla is an epiphyte but is said to require fertile, moist soil. There is some difference of opinion as to optimum conditions. Some say that vanilla grows better on slopes than on level land; "it yields more but the plants do not last as long." It does not grow well in an *aguachal* (a field with standing water), although it requires much moisture: "the soil must have a great deal of 'juice,' because the roots are on the surface."

Not everyone is fitted to grow vanilla. Some believe that one whose skin burns when the sap of the vine touches it will not be a successful planter. Moreover, some people have a "hot hand," and a vine planted by them will not grow. One may go to a *rezandero*, a functionary akin to a shaman, for treatment of this defect.

Vanilla is propagated by cuttings, not by seed. Cuttings about a yard (*vara*) long are taken from the old vines—generally from the ends which have grown so tall that both pollination and harvesting are inconvenient; however, "any part of the vine will serve." Bunches of 100 cuttings sold, in 1947, at $5.00 pesos the lot. Sometimes the price drops as low as $1.50; "it is very cheap if the owner needs money and nobody wants to buy."

The number of cuttings planted depends not so much on the area of the land as upon the number of shrubs and low trees available to support the vine. Low-growing plants are selected because vanilla grows best if it is not in complete shade and because, if the tree is tall, the vine climbs to inaccessible heights.

As supports for vanilla, the following are preferred: three distinct plants known as *cojón de gato* (Nos. 26, 138, 173; the latter preferable "because it gives most shade"), *cacahuapaxtle* (No. 87), *laurel* (No. 130), two kinds of *capulín* (Nos. 21, 85), and *estribillo* (presumably No. 61). Some consider the *laurel* the best of all; some prefer the *capulín* (No. 21) "because the leaves are cool."

The maize-vanilla rotation has been described previously, but it may be repeated that as a maize field is cultivated, all sprouting trees and shrubs which are suitable as vanilla supports are spared. At the end of a few years, these plants are sizable, and maize is replaced by vanilla. The artificial selection of plants associated with vanilla growing must have had a very considerable effect on second growth *monte* in this zone. For example, in parts of parcel No. 126, *capulín* comes pretty close to being the dominant vegetation.

Planting takes place some time between April and June, just before the rains start. With the metal *coa*, an excavation about 15 cm. deep is made at the foot of the tree or shrub on which the vanilla is to climb. The cutting is placed more or less upright in the cavity, but inclined toward the support. Its base is covered by leaves, or with some of the earth from the hole, care being taken not to pack the soil tightly.

Two cuttings, sometimes three, are planted to each support. Not all grow and perhaps only a third of the total planting is successful. Each cutting is not considered a separate vine, and ordinarily two are reckoned to a plant. Owners frequently count their vanilla holdings by number of plants rather than by area, although most know the approximate extent of the field, since previously it was planted to maize.

A vanilla field is known as a *vainillar* (kače net$^{?}$ni$^{?}$), and the number of plants per *destajo* may vary from 800 to 4,000. Few calculate less

[51] In 1610, Mota y Escobar (p. 231) reports vanilla (*"Tlilxochitl"*) for Totonac Chumatlán, but the reference might be to either a wild or a cultivated form.

than 1,000 and most planters estimate between 2,500 and 4,000 plants. However, after a few years, one loses track; some plants dry, but sprout anew, and the vine spreads widely and takes root, giving rise to new plants.

Except for pollination, which is very delicate and tedious work, vanilla requires a minimum of care. The field is not weeded. Supporting trees are hacked from time to time with a machete, so that they will not attain great height and so that a certain amount of sun may penetrate. Actually, to the uninitiated, a vanilla field looks precisely like a scrubby patch of *monte bajo*—as indeed it is. Underbrush is heavy and no effort is made to clear it.

The first year, the vanilla does not bloom;[52] the second, it produces a few flowers, but generally they are not pollinated—especially, if the vine "looks thin and somewhat yellow." In that case, it is left untouched, "to gather strength." Since a plant which bears too heavily dies, care is taken not to overpollinate young vines. Flowers are borne in clusters and even with a mature vine, not more than four to six blossoms of each cluster are pollinated. The maximum annual yield of a single vine is calculated very optimistically by informants at about 100 pods.

In late April or early May, the vanilla starts to bloom and for about 3 weeks produces a quantity of flowers. However, a given blossom is open only one morning and must be pollinated at once. During these weeks of spring, men, women, and children go almost every morning to work in the vanilla fields. Some families hire additional help, at $5.00 pesos the morning, the workers being local residents who have little or no vanilla of their own to tend.

To pollinate, the blossom (pl. 8, *a*) is opened with an upward slash, using a small, sharp stick. The tip of the latter then is inserted beneath *a* of figure 13; with great care, the pollen is removed on the point of the instrument and then is inserted beneath *b*. The pollen must enter in precisely the same position as it is removed (that is, the stick must not be turned), otherwise, it is said, fertilization is not successful.

[52] However, planting takes place after pollination, and sometimes a new cutting already bears four or five young pods per cluster of flowers at the time it is planted. These are not removed but are allowed to mature.

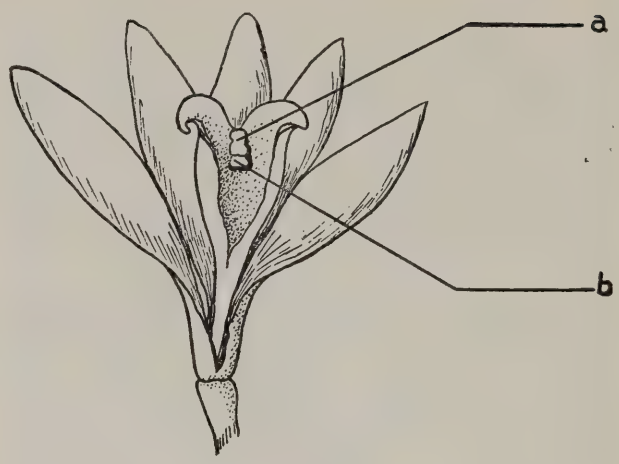


FIGURE 13.—Vanilla blossom. The labellum has been split with a delicate, chisel-pointed stick; with the same instrument, the pollen is removed from beneath *a* and is inserted beneath *b*.

If wild vanilla (*pompona*) is at hand, it sometimes is used for pollination. The flower is cut and carried to the cultivated vine, where the pollen is removed from the wild bloom and is passed to the pistil of the cultivated one. The procedure is identical, except that two flowers are involved instead of one. The resulting pods are larger and heavier, but usually are considered less desirable.

If pollination has been successful, a minute pod is visible about a week later. Vines are inspected carefully, and if necessary new blossoms are pollinated, so as to have maximum yield.

As a matter of convenience, most pollinate the blossoms which are within easy reach. High ones, although troublesome, have the advantage of being less subject to theft. For blossoms out of reach, the planter lashes a rope firmly between the trunks of two nearby trees, and steps on this improvised tightrope.

The stick for pollination is specially prepared. Some think that the wood is of little importance; others will use nothing but the heart of the *chaca* (No. 228). The sticks we have seen are 12 to 15 cm. long; but diameter may vary from 3 mm. to 2 cm. Regardless of thickness, the tip is whittled with a knife or machete until it has a delicate, chisel-shaped point.

### HARVESTING

After pollination, the vanilla is left to its own devices until fall, when the pods are collected.

Those within reach are grasped in the hand and the stem twisted off. Those high on the vine are removed by means of a long stick, split at the tip, with a small wooden crosspiece forcing open the cleft. In this fork the base of the pod is caught and twisted free, care being taken that the pod itself is not damaged.

Theoretically, the vanilla bean should ripen on the vine until December, and early cutting produces an inferior crop. Municipal authorities in Papantla set November 15 as the date prior to which it is illegal to sell green vanilla. However, as a matter of self-defense, the Totonac are obliged to cut earlier. They say philosophically that it is "better to cut green than to have the vanilla stolen," and most cut about the middle of October.

Newly cut pods are not placed in the sun to dry until 5 or 6 days have passed; otherwise the drying is not successful. Moreover, vanilla is left only an hour or so a day in the sun; if exposed more, the color is altered and sale value lost. The chore of drying is prolonged for months and sometimes is extremely difficult because there is no sun.

Most Totonac sell their vanilla green, either to small-scale buyers or direct to the big merchants in Papantla, who attend to the drying. However, if the pod has started to turn yellow, generally it is retained, to be dried in Tajín and, later, to be sold for a better price. Although few Totonac cure their vanilla, Pedro Pérez has rigged up in his house a drying frame, which consists of two substantial poles set in the ground near the wall; above, they are tied to the frame of the building. The poles support six narrow shelves, of split bamboo, on which the beans are spread (fig. 14).

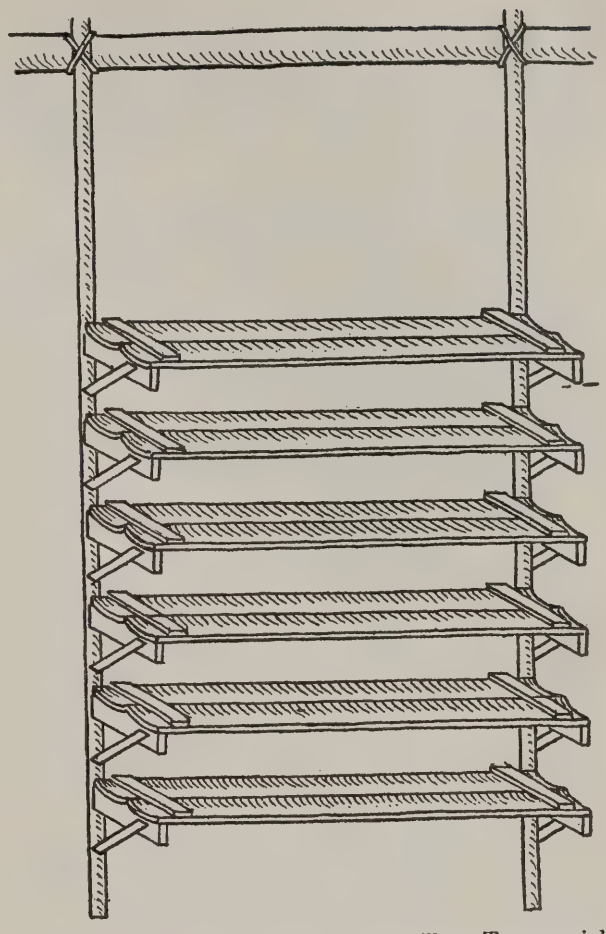

FIGURE 14.—Frame for drying vanilla. Two upright poles are set in the ground, against the interior of the house wall; above, they are tied to the frame of the building. Two lengths of split bamboo, concave side upward, form narrow shelves. They are supported by strips of wood, cut from commercial boxes, and nailed in place; on the upper surface of the shelf, another narrow strip holds the bamboos in position. Not to scale.

### MARKETING; THEFT

All Tajín vanilla, green or dry, is marketed through Papantla, which clears even that grown as far distant as Tuxpan. It may pass, however, through several hands before it reaches the capitalistic vanilla merchants in Papantla. As will be seen below, a shockingly large percentage of the crop is stolen. Individuals known as *pacotilleros* (those who make small bales, or *pacas*) buy the stolen green vanilla; they generally sell to intermediaries, who then resell in Papantla. Local storekeepers also buy vanilla for resale and, in addition, a good many small-scale intermediary buyers come to Tajín in the fall and arrange in advance to buy the crop. They may leave a deposit, to demonstrate good faith, then return on a set date to collect the pods. In the fall, these small-scale buyers, and the agents of the big dealers in Papantla, infest the trails, trying to persuade passers-by to sell to them. Vanilla marketing is discussed further in Part 2, in the chapter devoted to Commerce.

Years ago vanilla was sold in lots of a hundred pods, at $10.00 to $12.00 pesos the hundred. Later it was sold by the pound (*libra*), in rolls of 3 to 5 pounds each; 100 beans are said to make 5 pounds.

Nowadays, it is sold by kilogram, and the price depends on various factors. Green vanilla invariably brings a great deal less than does the dry bean; quality also enters into the price, as does supply. Those who can afford to, wait until January to sell to better advantage.

For example, in October of 1946, the price for green vanilla ranged from $4.00 to $9.00 pesos the kilogram; in November, from $6.00 to $11.00. However, by December, the price had risen to $12.00; and by January, when the bean was partially dried, from $12.00 to $14.00 pesos. For well-dried vanilla, the Totonac receive $40.00 to $50.00 pesos. *Picadura*—oddments, such as broken beans and lone ones which have been overlooked in the same general harvest—go on the market in January, and bring about the same price.

Unfortunately, most Totonac are not able to wait until after the first of the year to sell their vanilla. They need the money—particularly because the observances associated with All Souls' Day are expensive. Moreover, a good many sell early simply because they are afraid to have the vanilla on hand, for it may be stolen and they themselves liquidated in the bargain.

A Totonac who no longer plants says flatly that he is not interested in raising vanilla: "One plants, one pollinates, and someone else harvests." One of his sons was killed some years ago while on his way to the vanilla field, and the father adds sadly that he "prefers not to have money and to keep his sons."

One might almost say that theft is endemic to the vanilla business, although most Totonac feel that it has been on the increase during the past few years. As the cutting season approaches, theoretically, one should be on guard day and night. However, many feel that discretion is the better part of valor and make no effort to watch the field, for harrowing tales are told of planters who have tried to protect their holdings and who have been murdered for their pains. Some, however, wander daily in the field; if they see evidence of intruders, they make a brave show of whistling and of chopping wood, in the hope of discouraging the robbers. At this time of year, a planter thinks twice before going to Papantla for weekly purchases because the harvest may be stolen during his absence.

Practically everyone is agreed that local persons are involved in the thefts. "Otherwise, how could they find their way through the fields so easily, and how could they know when one has gone to town?"

Even so, it is evident that the buyers in Papantla are far from scrupulous and are quite content to traffic with stolen property. With the ostensible purpose of reducing theft, municipal authorities in Papantla set November 15 as the date prior to which it is illegal to sell green vanilla. This ruling is just about as effective today as it was in the eighteenth century (Bruman, p. 370). There are, in fact, rumors of a sprightly contraband commerce in Papantla. At night, trucks are said to enter town with stolen vanilla from Tuxpan and, likewise during the night, the cargo is dispatched from Papantla by muleback. State taxes apparently encourage contraband activities. We naively hoped to obtain a rough estimate of the vanilla marketed through Papantla on the basis of the tax proceeds. But a number of disinterested citizens of that town assure us happily that there is scant agreement between taxes and production, since the big merchants find it more economical to pay bribes in lieu of taxes.

### PRODUCTION

Vanilla requires more capital than does maize. The planter must have land, either owned or rented; he must have sufficient funds with which to buy cuttings; and he must be able to wait until the third year for any proceeds. Moreover, he must be willing to gamble on rather poor odds, because the crop fails frequently and because, to boot, a large proportion of the harvest invariably is stolen.

Of the 36 families for whom we have detailed information, 27 plant vanilla. Many plant on rented lands, for which the charge normally is higher than if maize were to be grown. Some owners waive the rent until the third year, when the vine begins to bear. Others charge $25.00 pesos for half a *destajo*, $35.00 to $40.00 pesos for a full one. After the first harvest, the rent may be raised to $100 pesos; after the second, to $150. In no case is the vanilla considered the property of the landowner, and if, for any reason, the planter withdraws from the field, he removes his vanilla and plants elsewhere.

The size of the local field varies from 0.125 to between 3 and 4 hectares. Often an individual has several small plots, and of the 27 families, 6 have their vanilla holdings scattered. One planter has as many as seven different fields—some on his own land, some on rented property. The normal life of a vanilla field is about 10 years, but toward the end of that time the yield diminishes; however, we know of fields 18 years of age which still are bearing.

Vanilla is of major importance economically because it is converted directly into cash. With the latter, a Totonac is able to pay for doctors and medicines and is able to buy clothing, kerosene, lard, meat, bread, coffee, salt, and many other useful items. Twenty-five years ago, when the vanilla business was really profitable, one man and his four sons planted 5 *destajos* to vanilla; with the first (?) harvest they cleared $20,000 pesos—each bought land and built a house.

Those days are long since past, but even now, in a good year, the income from vanilla is not inconsiderable. Of our 27 families, 2 have fields which are not yet producing, and another gave an incomprehensible statement concerning his sales. Accordingly, we have information concerning vanilla proceeds from 24 families The income from the 1946 crop ranges from $20.00 to $1,310 pesos per family, with an average of $361.83. This does not include stolen vanilla, which probably averages at least one-third of the total crop. Nor does it include any correction for the few individuals who manifestly gave false statements—as with maize, fearing that their taxes might be raised.

Vanilla production in Tajín probably could be placed on a more secure footing. It would be unwise to base an entire economy on it, because of the irregular rainfall and the danger of complete crop failure from time to time. In 1944 and 1945, for example, almost no vanilla was harvested, owing to drought; the 1946 crop was good, "but barely sufficient to pay what had been borrowed." However, in its present role, as a cash crop to supplement maize, vanilla growing fits admirably into the existing economy, and increased proceeds from it would mean an improved standard of living.

As we see it, increased proceeds depend largely on two factors: (1) control of theft; and (2) better marketing facilities. As matters now stand, the Totonac planter takes all the responsibility and all the risks of production, while the pilferers and the Papantla merchants reap most of the profits.

For the reduction of theft, we have no solution to offer. Obviously, legislation in itself is not effective. However, on the score of marketing, the situation is more hopeful. At present, the price of vanilla is set by the half dozen buyers in Papantla, who enjoy a monopoly. Four pesos the kilogram do not warrant the trouble of pollinating and harvesting. The natural solution of the marketing problem would be a Tajín cooperative which would be in a position to bargain collectively and which, moreover, would not be obliged to limit its sales to Papantla.[53]

The establishment of a cooperative in Tajín will not be easy. On the score of vanilla, no man trusts his neighbor, and concerted action will be difficult. Yet, if the Totonac could be persuaded of the wisdom of collective bargaining and if they could bring themselves to designate as their agents a few persons of integrity—and there are many in the community—the project should be extraordinarily beneficial. The vanilla business is profitable—for the buyer, if not for the planter.[54]

## SUGARCANE

Cane is an introduced crop which the Indians seem to have adopted early and with great enthusiasm;[55] the Totonac believe that they have "always had cane."

Cane is in part a cash crop, although at least as much is raised in Tajín for home consumption as for sale, and most families have a few plants. Although fewer sell cane than vanilla, those who plant in quantity realize about as much from brown sugar as they do from vanilla, and, for the 10 households for which we have data, sales range from $20.00 to about $1,100.00 pesos annually, per family.

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[53] The Cámara Nacional de Comercio, in Mexico City, is able to provide a list of many manufacturers who buy vanilla.

[54] A local buyer on a small scale proposed that we collaborate with him. He asked for $10,000 pesos capital, assuring us that at the end of a single season he would be able to return the initial investment, plus a profit of 100 percent.

[55] Motolinía (p. 164) notes that the Indians of *tierra caliente* "son tan amigos de cañas de azúcar para las comer en caña, que han plantado muchas y se dan muy bien . . . ."

### KINDS OF CANE

To all intents and purposes, there are two kinds of cane, a "white" and a "purple,"[56] with the latter subdivided into a heavy stalked form whose color is confined to the skin, and a thin, spindly type whose pith and skin are colored. The last cane is used chiefly as a remedy for whooping cough; the skin is removed and the child chews the pulp. Other canes are believed to aggravate a cough.

White cane is the more difficult to grow. It may be injured by too much water or too much sun; it is easily knocked over by the wind, and thereafter cannot be processed; and it is a favorite food of marauding animals. Moreover, if it is not cut and milled at the indicated time, the juice dries and the yield is small. On the contrary, the large purple cane is more resistant; it withstands wind; it is less favored by animals; and one may delay considerably in grinding it, without reduction in yield. Those who plant in quantity prefer this heavy dark cane, and from it is made most of the brown sugar manufactured in Tajín.

### PLANTING AND CARE

Cane is believed to grow best in fields which recently have been cleared of *monte alto*. In Tajín, level land with poor drainage (*aguachal*) is preferred; and in this respect, cane fits nicely into the local pattern, because neither maize nor vanilla is suited to such terrain. However, cane also is grown successfully on slopes.

Like vanilla, cane is raised from cuttings. Either "the point" of the stalk is used, or a length of 2 *jemes* (ca. 40 cm.), so cut that three joints are included.

Planting takes place when there is ample precipitation—either during the drizzles of fall or the cloudbursts of summer. Some consider October the best month; others, December; and one recommends June. Within 20 days, the cuttings sprout, and a minimum of 8 months passes before the cane is first cut. Those who plant in October count on cutting the following May; and December planting is ready by the next August. New cane, however, may be left uncut as long as a year and a half.

Only in exceptional cases, when the individual contemplates a shift from maize to cane, is the latter planted between the rows of corn; generally it is put in a separate plot (*cañal*, kat?činkat?-nín). Those who count their holdings by number of plants rather than by hectares or *destajos*, often have clumps of cane in the milpa or in the clearing about the house, instead of in a field apart.

The land is cleared and the earth is worked with the metal *coa* to form rows. A hole then is made with the digging stick. Sometimes it is dug on an angle, and three or four cuttings are set in the cavity, not upright, but inclined. They are covered by earth to more than half their length. Others make a more or less rectangular hole, into which two or three cuttings are laid flat, in the same axis as the hole; in this case, the cutting is completely covered by soil. Planting is in single rows, about 2 m. apart.

The plot is weeded until the cane is well grown, but otherwise requires no attention.

### CUTTING

When the cane "blossoms" it is ready for cutting and ceases to grow. One waits a bit, in the belief that the yield is higher, but too long a wait means less sugar.

Most seem to feel that maximum yield is derived from cane cut in April or May. Many harvest part of the field then, leaving the remainder until November. At that time, brown sugar is marketed so that money may be available for the expenses connected with All Souls' Day. Moreover, on this occasion, it is considered socially correct to bestow gifts of cane sirup (cooked, but not solidified) on relatives and *compadres*, so that they may eat it with the *bollitos de anis* (p. 153) which are prepared for that festival. Many harvest the cane little by little, as the household needs either sugar or cash, or both. Cutting in June and August is considered least productive.

"Cutting is more work than planting." With a machete, the cane is hacked off low to the ground; a diagonal cut is considered imperative. Most families are able to cut without outside assistance, and sometimes women help. If a brother should

[56] Most informants recognize two kinds of cane, a "white" (čánkat) and a purple (sitsáka čánkat; dark or black cane). Several speak of a white cane striped with green (akáčok čánkat; shrimp cane; because of its markings) but others say that this is the same as the white. One informant speaks of a yellow cane, not recognized by anyone else; and another describes a "greenish" variety (istéknik čánkat), which "never becomes hard."

lend a hand, he either is paid in cash or is given a share of the sugar.

The cut cane sprouts anew, and replanting is not necessary for 2 or 3 years.

### PROCESSING

Both men and women haul cane to the mill (*trapiche*). Men use a head tump; a few women follow suit, but most carry a bundle of stalks on the head. If the family has a donkey or is able to rent one, the pack saddle is fitted with a pair of forked sticks which hang low on each side. Into the crotch of these the cane is stacked, and a small boy escorts the cargo to the mill. About a hundred stalks,[57] each a yard (*vara*) long, comprise a load (*carga*).

If a planter has a hectare of cane, it is advantageous for him to own a mill. An incomplete count indicates that at least 29 families in Tajín are so equipped; 11 mills are of wood, 20 of iron; two families have both kinds.

The iron mill (pl. 8, *b*) is a commercial product, usually, if not always, manufactured in the United States and sold in Papantla for $1,200 to $1,300 pesos. The mill proper consists of a series of upright cylinders between which the cane is crushed. The large central one is known as the nursemaid (*nana*), the smaller ones, as the children (*hijos*). This contraption is mounted in the open air, on a frame of four substantial uprights set in the ground and connected by crosspieces. On top, a long pole is attached to the large central cylinder. It is arched slightly downward, and to one end of it a horse or mule is hitched. The animal walks or is driven in a circle about the mill, thus providing traction which turns the central cylinder; and this, in turn, revolves the smaller ones. Formerly, it is said, a pair of yoked oxen turned the sugar mill, and Basilio Hernández still has an aged wooden yoke, used in his father's day for hooking oxen to the mill.

Generally, cane which is hauled to the crusher is laid across two parallel sticks, so that it does not rest directly on the ground. From this stack, stalks are removed as needed. A substantial post, which serves as a chopping block, is set vertically in the ground adjacent to the mill, sufficiently low so that the pole to which the animal is hitched will clear it. A cane is laid across the top of the block and the joints cracked with a sharp blow from a heavy wooden mallet (litʌlan). The latter is similar in form to our old-fashioned wooden potato mashers (fig. 15, *c*) and is of *zapote*, *moral*, or *pimienta* wood (No. 191, 324, 30). If the cane is not thus broken, the animal turning the mill soon tires.

One man manipulates the metal mill. He cracks the cane and feeds it into the mouth of the crusher and the dry stalks are ejected on the far side. If the canes are thin, two or three may be inserted at the same time. The juice drops into a receptacle on the ground beneath. Formerly, this was an oval, wooden, dugout tub, with a lug at either end. Today, a 5-gallon tin most often is used. If the receptacle is a clay pot, its rounded base rests in a ring made of dry, crushed cane, wrapped with liana.

The wooden mill (pl. 8, *c*, *d*) works on the same principle, but the crushers are of wood instead of iron. There are three upright cogged cylinders each cut to receive the teeth of the adjacent one. The central cylinder has an upward extension, through which is passed the pole to which the animal is hitched. As the central cylinder revolves, the two flanking ones follow suit. The supporting frame of the wooden mill has two uprights instead of four.

Although its sugar has a better flavor, the wooden mill is less effective. Two individuals work it, one on each side. One feeds the cane into the machine, between the central and right-hand cylinder; it emerges on the far side, where the other operator returns it to the mill, between the central cylinder and the one on his right. This time, the stalk is twisted sharply to assist in extracting the juice. On the contrary, the iron mill requires only one operator, and the cane is crushed in a single passage through the machine.

In Tajín wooden *trapiches* are made by Pedro Pérez, Francisco Villanueva Mata, and perhaps one or two others. They charge $100 pesos for labor alone, the owner providing the wood. The cogged cylinders are of *zapote*, *ébano*, or *moral* (Nos. 191, 152, 324). A man from nearby Plan de Hidalgo comes occasionally to Tajín to drum

[57] According to the thickness of the stalk, 45 or 50 canes—the later usualy expressed as 25 pairs—form a *tercio;* and 2 *tercios* make a load.

up trade; he undersells, and at least one family has bought a mill from him at $75 pesos.

The frame on which the mill stands is not included in the above price. The supports are of any hard wood, such as *chijol*, *zapote*, or *moral* (Nos. 176, 191, 324), and any Totonac handy with tools is able to mount a mill in about 3 days.

When sufficient cane has been crushed to fill the receptacle with juice, the latter is emptied into a large copper vessel, to be boiled. This is an almost hemispherical cauldron, with two large loop handles at the rim, opposite each other. There are various sizes of copper vats, and the juice from four donkey loads of cane is considered sufficient to fill one whose capacity is ten 5-gallon tins.

Nowadays, a 50-gallon copper cauldron costs about $300 pesos. The best containers are said to be from Santa Clara—presumably Santa Clara del Cobre, in Michoacán. Formerly, they were sold by an itinerant merchant, one Enrique Ortigosa, of Cuetzalán, Puebla. Evidently local business prospered, for he and a son have established themselves in Papantla, where they make copper kettles, said to be inferior to those of Santa Clara.

Before the copper vat is filled with juice, a fire is started in a specially prepared "oven" (pl. 8, *e*, *f*) adjacent to the mill. Generally this is located on a slight rise. A circular subterranean firebox is excavated, with an opening in the side of the slope, through which fuel is fed. The floor slopes slightly toward the opening, so that the ashes may be raked out with greater ease. Over the fire chamber is built a low, partial dome of masonry, open at the top in such a manner that the cauldron fits into the aperture (pl. 8, *f*). On the ground, at the base of the dome, is left a small opening at each side which provides draught for the fire. The dome is built of smooth stone slabs, set like a false arch, in mortar of mud or of lime and sand. For the lower courses, some use equal parts of lime and sand, but near the summit, add more lime, so that the structure will not fall with the weight of the cauldron. Often, a simple roof of palm, supported by forked posts, protects the "oven" from sun and rain.

As fuel, *laurel*, *zapote*, *pimienta*, and *huesillo* (Nos. 130, 191, 30, 330) are preferred. If the "oven" is cold, two donkey loads of wood per cauldron of juice are required. However, only half that amount is necessary, if the oven already is hot and the problem is to retain the heat. It is said that one *tarea* of wood is sufficient for five cauldrons of cane juice.

The copper cauldron with the sirup is placed over the fire to boil. In October and November, after continuous rains, the sirup is watery and the flavor insipid. To correct this, a few handfuls of sifted wood ash are added. They are placed in a calabash shell and a small amount of the hot sirup poured over them. "The force of the ash rises," and the liquid is returned to the cauldron; the sediment is thrown away. In precisely the same manner, regardless of season, a small quantity of lime usually is added, so that the sugar may be light-colored.

"In May there is much sun," and ash is not required, except for cane which has been grown in low, level fields with poor drainage. In fact, usually the cane juice is so concentrated in the spring that it is advisable to dilute it with water. For example, if the cauldron is of 12 tins (60 gallons), half a tin (2.5 gallons) of water may be added.

The hot sirup is skimmed frequently with a leaf of sugarcane. As it begins to boil, a special colander (*pichancha*, liakaqlúkni?) is used for skimming. It is a simple copper plate or bowl or a shallow gourd, with many perforations, which is tied to the fork of a long, straight pole (fig. 15, *g*, *h*,). Since *laurel* (No. 130) weighs little, it is preferred. The scum removed from the surface is known as *cachaza;* ordinarily, it is thrown on the ground, but should anyone eat it, he becomes excessively sleepy and "cannot be aroused for hours."

As it boils, the sirup rises, and usually some is removed from the cauldron to prevent spilling. When the liquid is relatively free of impurities, a copper cone (*copa*), open top and bottom, may be placed over the boiling sirup. The base fits into the cauldron, and as the liquid boils, it comes through the peak of the cone and runs down the exterior, back into the cauldron. Those who do not have a cone, dip the sirup constantly with the handled colander, to keep it from boiling over.

In the course of several hours, the liquid thickens,[58] and when it is about the consistency

[58] Sometimes, owing to the evil eye, the sirup may "refuse to thicken," in which case a few leaves of *aguacate oloroso* (No. 248) are tossed into the vessel.

of maize gruel, the cooking is terminated. At this point, some sprinkle a pinch of bicarbonate of soda over the surface of the sirup, but we are not certain whether this is to improve the color or the texture. A long pole is passed through the large loop handle at each side of the rim, and two men lift the cauldron from the fire. For about half an hour thereafter, as the sirup cools, it is stirred with a slender stick (fig. 15, *i*) of hard

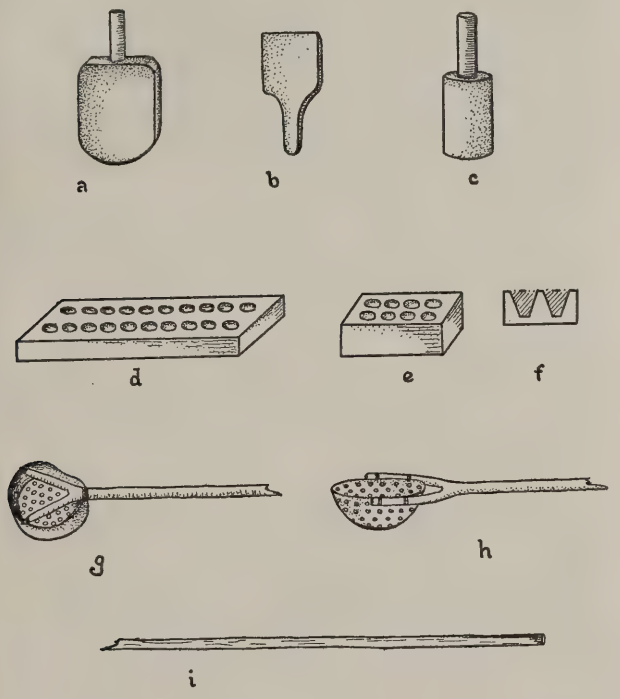


FIGURE 15.—Sugar-making equipment. Specimens do not appear in the sequence in which they are used. *a*, *b*, Wooden paddles used to scrape sugar which adheres to walls and floor of the cauldron in which the cane juice is boiled. *c*, Wooden mallet, with which joints of cane are cracked before it is fed into the mill. *d–f*, Wooden molds for brown sugar. *g*, *h*, Colanders, with forked stick handles, used to skim boiling cane juice; *g*, metal bowl; *h*, gourd. *i*, Pole used to stir boiled sirup as it cools. Not to scale.

wood, such as *laurel*. When the liquid which drops from the rod forms a more or less solid mass, the next step is to pour the sirup into the mold (fig. 15, *d-f*).

The latter is a squared block or beam, sometimes of mahogany, but usually of cedar, since the latter resists cracking when subjected to heat. In this block have been made two rows of subconical cavities in which the cakes of sugar are to be formed. Generally, each man makes his own mold, but if he is busy, he may hire someone to do the work. If the carpenter supplies the wood and the labor, he charges $3.00 pesos; if he is given the wood, the price is $0.10 for each cavity. The latter may be one of two sizes. Some prefer molds so made that the resulting cake of sugar weighs a bit less than half a kilogram; others prefer a larger cavity which produces a cake of about three-quarters of a kilogram.

If one has no mold, he can borrow from a neighbor, with the understanding that the loan is "for days and not for months." Or he prepares a makeshift by cutting a large stalk of bamboo in lengths of about 15 cm. These are stood in line on a plank, and the heavy sirup poured into them. There is no Totonac name for mold.

So that the sugar will not stick, the form is moistened with cold water, and with a large spoon-shaped gourd, the sirup is dipped from the vat into the cavities. The sides of the cauldron are scraped with a wooden paddle (liswik?en) (fig. 15, *a*, *b*) of *zapote* wood. Most of the sugar goes into the mold, but the small fry of the family congregate hopefully, to nibble the scrapings which are too hard to be added to the cakes.

After half an hour in the shade, the sugar is set, and the mold is inverted in a bed of dry, crushed cane. The latter, incidentally, is of no other use and generally is burned or thrown to one side to rot. A small amount of water is poured into the now empty cavities of the form, and the latter is left in the shade until the next batch of sirup is ready.

The squat, subconical cakes of brown sugar (*panela*) dry a short while before they are wrapped. Two are placed, butt to butt, in a corn husk, and the wrapping tied with cordage made of the leaf of the *palma redonda* (No. 259) (p. 220).

A parcel containing two cakes of brown sugar is known as a *mancuerna;* this is the standard unit used locally. Size and weight vary according to the mold; some *mancuernas* weigh less than a kilogram, others, about 1.5 kg. Price ranges from $0.30 to $1.00 peso a *mancuerna*, according to size, color, and quality—also, according to supply and demand. In Tajín, the price usually is between $0.40 and $0.50; in Papantla, it is slightly higher.

Production depends largely upon the season and upon the condition of the cane. For example, following a spell of hot, dry weather, a given cauldron of juice may yield only 10 *mancuernas* instead of the usual 25. By and large, it is said that one *destajo* of land planted to cane produces annually between 2,000 and 2,400 *mancuernas* of sugar.

Local sugar is of good quality—well flavored, light-colored, clean, and of uniform texture. It is infinitely superior to the general run of brown sugar marketed in Mexico City at twice the price and characterized chiefly by its brunette character and its profusion of odd bits of refuse.

### BORROWED EQUIPMENT

The processing of sugarcane requires special equipment not owned by every household. The metal mill and the copper cauldron, cone, and colander are commercial products, generally purchased in Papantla. The wooden mill, on the contrary, generally is made in Tajín by a specialized craftsman. Other items of equipment—mallet, gourd colander, stirring stick, scraper, and mold—present no major technical problems, and each individual usually makes his own.

Some cane planters have no equipment whatsoever and arrange to use that of a friend or relative. Some relatives make no formal charge, but subsequently the borrower liquidates the debt by offering his services in some chore. Generally, however, payment is in sugar or cash.

The price is settled by individual agreement. Often the charge is 2 *mancuernas* (that is, 4 cakes) of sugar for each item of equipment—the mill; the animal; and the oven and cauldron—a total of 6 *mancuernas*. Some charge 3 *mancuernas* a day for the mill, plus 3 more for the use of the oven, cauldron, colander, scraper, and mold. Others exact a flat rate of 4 *mancuernas* for each cauldron of cane juice which is prepared. Payment is made with *mancuernas* of the size produced by the borrowed mold, and if one prefers to pay in cash, he substitutes $1.00 peso for each *mancuerna*, although this is about double the market value. When the animal for traction is rented separately, the owner may charge $2.00 pesos for each cauldron of cane juice which is crushed.

## BEANS AND OTHER LEGUMES

### PHASEOLUS AND VIGNA

In many parts of Mexico, beans are a staple food, and, in most households, at least in the western states, cooked beans are available literally any hour of the day or night. This is not the case in Tajín, where beans are on the fringes, if not within the limits, of a luxury food.

Half a dozen different kinds of beans are recognized by informants. Of these, the kidney and the limas are native to the New World, while the others generally are considered Old World. The latter include the rice bean and two variants of *Vigna;* the latter, strictly speaking, are not beans, but are closely allied.

Informants regard one kidney and both forms of *Vigna* as native. Concerning other kidney beans, opinion is divided; and of limas, some distinguish a native form and one allegedly introduced from the highlands. Also attributed to the highlands is the rice bean, which usually is considered by botanists as a native of Asia and which is cultivated "sparingly" in China and India (Bailey 3:2575).

In a number of cases, there is considerable confusion in both Totonac and Spanish terminology. Totonac names generally are descriptive, and a term given by the informant may depend on what special quality of the bean he happens to have in mind. Furthermore, a vine which does not dry after the first crop, but which continues bearing, is known by a generic term, aklatamañástapu. It so happens that this characterizes several of the beans, although we did not realize for some time why evidently distinct beans were given the same Totonac name. In the 1948 season, Roberto Williams was assigned the chore of disentangling the situation, and, largely through his systematic interrogation of several informants, many of the difficulties were resolved.

For most of the beans grown locally, we have both pressed specimens and seed samples; the former were submitted to Dr. H. E. Moore, Jr., and the latter to Dr. Hugh C. Cutler. In the discussion below, it may be understood that their determinations agree, except when specifically noted otherwise.

The lima bean is of particular interest. It is by no means common in Mexico as a whole.[59] Informants distinguish two kinds of limas, one native, and the other intrusive from the highlands. Neither is prized, and the flavor is described as "half bitter." Lima beans are grown on very small scale, and a family seldom has more than four or five plants in the maize field. Concerning our limas, Dr. Cutler writes that of the three phases defined by Mackie, the Tajín specimens "are closest to the Hopi branch."

No bean is grown locally in quantity or with marked success. Of 38 families for whom we have data, only 6 attempt to plant beans—although, probably the 32 who deny planting, overlook the four or five vines of limas found in most milpas. However, of the six who plant, none harvests in sufficient quantity to sell.

Opinions vary concerning the difficulties. One informant says, "If it rains the beans grow; if not, they dry. For my part, I do not like to plant them." Another believes beans do not yield "because of the sun"; another, because of "too much water." One farmer states, "I always plant beans but they do not grow." The consensus of opinion is that beans do not yield well, if at all, in Tajín. The *Vigna*, often considered particularly satisfactory for hot lowlands, is planted locally with indifferent success. However, if a variety of bean or cowpea could be found which would thrive in Tajín, it should effect major improvement in the diet, which is low in protein.

Planting apparently takes place during any season—hence, presumably, the complaints concerning both drought and excessive humidity. As usual, certain days of the religious calendar are more favored than others (see below). All beans are said to yield in 3 months. One kidney (*frijol criollo*) alone produces a single crop, following which the bush dies. Other beans may be described as semiperennial—that is, they continue to bear for a couple of years after the first harvest. Although the plant dries, it sprouts anew.

Two forms—the *frijol criollo* and the *frijol amarillo* (see *a* and *d*, below)—are bush beans; another (*frijol majayán; b*, below) is a climber if planted in summer, a bush bean if planted in winter.

Slopes with good drainage are preferred and flat fields with standing water are avoided. Beans are planted in the maize field, but not necessarily among the corn. One kind of kidney bean (*a*, below), for example, is given a plot (*frijolar*, kas ʔtápun) by itself in the milpa. This generally is true of *frijol majayán* as well. But if the latter is planted in summer, the seed is dropped into the same hole as the kernels of maize. Or, if not planted concurrently, it may be placed between the rows of corn. The *frijol de cuerno* (*Vigna*) also is planted between the rows of maize, but the lima often is grown in the same row with the corn.

The best of the crop is set aside for seed. If one is planting for the first time, the seed may be purchased, for the belief that bought seed will not produce applies exclusively to maize. In planting, a hole is made with the digging stick, but by no means as deep as for maize. Beans are planted at a depth of about 5 cm., and, curiously, are not covered with earth. "Birds do not eat the seed; the danger from birds and rabbits is later, when the plant is young."

From time to time, beans are weeded, but otherwise receive little attention. To frighten animal pests, a tin can with a small stone inside may be hung in the field; it moves with the breeze and the stone rattles.

In harvesting, there are two techniques. The entire plant of the *frijol criollo*, which is a one crop bean, is thrashed (see below). However, other kinds of beans continue to bear, hence the pods are harvested individually, being collected in a pottery vessel, a gourd container, or any other receptacle at hand.

Young green beans are not eaten entire. Invariably they are shelled, and the discarded pods usually are boiled and fed to the pigs. It is curious that the Totonac have no notion of eating a string bean, although the latter is to be seen in the vegetable stalls in the Papantla market, for sale to town dwellers.

[59] Redfield (p. 39) regards the lima bean as of European introduction at Tepoztlán. Apparently it is not grown locally, but is brought from Mexico City (p. 90). This in itself is odd, since there, the lima generally is found retail only in fancy groceries, where it is considerably more expensive than other beans. This, plus the fact that the toasted seed is eaten in Tepoztlán (p. 86) makes one suspect that Redfield's statements apply to the Old World horsebean (*Vicia faba*) rather than to the lima.

Below is a description of the different kinds of beans grown locally, based more on informants' statements than on our observations:

*a. Frijol criollo* (native bean)); *frijol de Castilla* (bean of Castille).

ka-nástapu (kana, *verdadero;* stapu, *frijol;* true bean). Called aklatamañástapu by one informant, evidently in error; this term applies to beans which continue bearing after the first harvest, a trait not characteristic of the bean in question.

Cutler: *Phaseolus vulgaris* L.;[60] Moore: *Phaseolus* sp. (No. 233).

Bush bean, ca. 30 cm. tall; small black (some brown?) seeds; pod ca. 15 cm. long; borne in pairs. Planted in

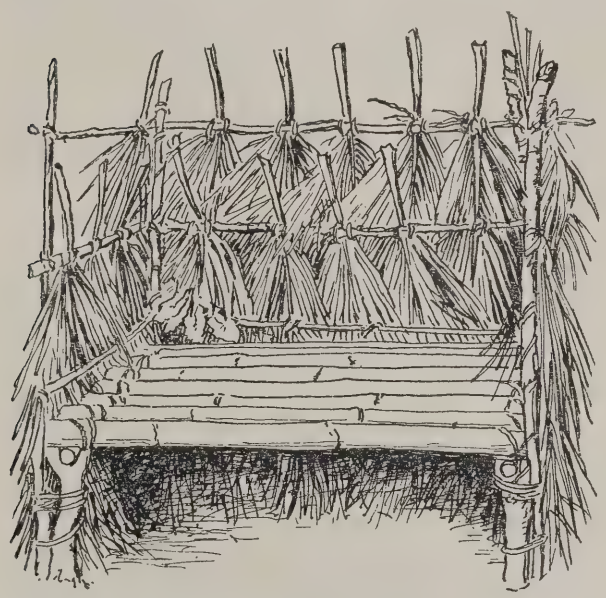

FIGURE 16.—Frame for threshing beans; used only for *frijol criollo.* See text (p. 134) for description and use. Drawn from a photograph and field sketch; not to scale.

maize field, but in a section separate from corn. Hole punched with digging stick; 3 to 4 seeds dropped in. Ca. 40 cm. left on all sides; planted in rows.

Grows best on slopes with good drainage. Planted 3 or 4 times a year: Candlemas (February 2); Holy Cross Day (May 3); Day of our Lady of Carmen (July 16); St. Michael's Day (September 29); or in December. Most recommend February, May, December.

Matures in 3 months; plant dries after bearing. Dry plant pulled and generally taken to house for thrashing. In sunny weather, placed in the yard, on woven mat. Plants heaped on mat and exposed to sun; with heat, pods open. Covered with another woven mat or an old canvas and beaten with a light stick. Refuse removed and harvested beans repose beneath, on lower mat.

Another arrangement for thrashing shown in figure 16. A frame, thatched with palm on 3 sides, has floor of split bamboo. Plants heaped on the floor and beaten with a stick. Beans fall between interstices of bamboo, on woven mat placed beneath. The Maya of Yucatán apparently use a similar device for shelling corn (Steggerda, pl. 20, *e*).

If it is raining, beans shelled by hand, over woven mat on house floor. Plant held in left hand, root upward; butt of pod grasped between thumb and finger of left hand (fig. 17). Seeds stripped from pod with thumb and fin-

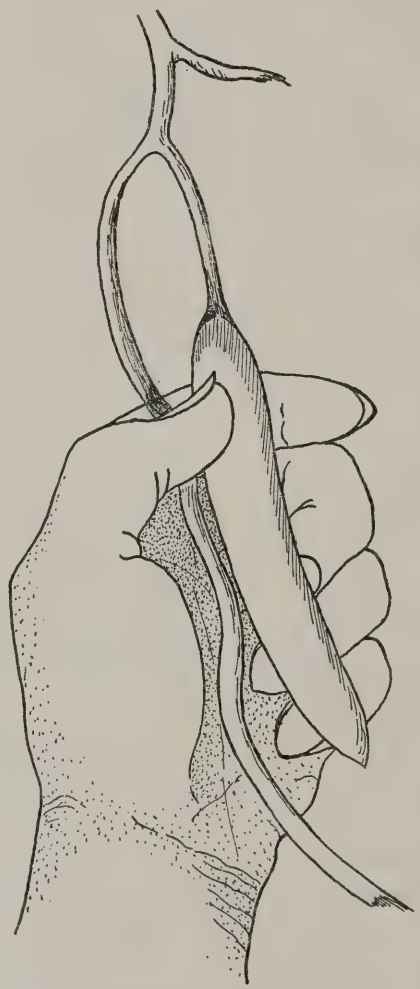

FIGURE 17.—Shelling beans. See text (p. 134) for description.

ger of right hand, using rapid downward motion. This technique for pods of fair size; if small, the plant merely shaken over the mat.

Considered the best flavored of all beans.

Most plant only for home consumption; others sell in small quantity, usually locally, by liters. Said to bring better price in Papantla than other beans. *Frijol criollo* sold at $1.50 a kilogram, others ca. $1.00.

Regarded as native.

[60] Two seed lots originally were identified by Dr. Cutler (undated letter of December 1947) as the tepary bean, *Phaseolus acutifolius* Gray, var. *latifolius* Freeman. Later (letter of August 2, 1949), he writes that "there is nothing tepary-like about your beans I determined as such earlier, and the dull color was mainly dust."

*b. Frijol majayán.* Called by some *frijol criollo* (native bean) or *frijol de Castilla*, but not to be confused with the preceding, which also bears these two alternative names.

Known to some informants only as *majayán.* Others say the Totonac name is lukústapu (lúkus, *hueso;* stapu; *frijol;* bone bean, because of its hardness). By still others, this Totonac term is applied to *frijol de cuerno* (see *e*, below).

Cutler: *Phaseolus vulgaris* L.; Moore: *Phaseolus* sp. (No. 238).

A bush bean, if planted in winter; a climber, if planted in summer. Seed described as similar to the preceding, but "more brilliant, as though greased." Pods ca. 10 cm. long, borne in pairs.

In summer only, may be planted with maize. Seed carried in a separate fiber bag, but dropped into the same hole with the corn. Various planting dates recommended: Holy Cross Day (May 3); Corpus Christi; Day of Our Lady of Carmen (July 16); St. Michael's Day (September 29); Christmas; Kings' Day (January 6).

If not planted concurrently with maize, may be added later to the field, between the rows of corn. However, generally grown in a separate plot within the milpa. Planted in rows, leaving a *cuarta* (span) on all sides. Three grains per hole.

Ripens in 3 months; apparently continues bearing after first harvest.

Sold locally and to dealers in Papantla market. Occasionally as much as 4 to 6 *fanegas* (576 to 864 liters) sold, at $144 pesos a *fanega.*

By some, considered native; by others, intrusive from the highlands, but no concrete data obtainable. One informant mentions a *majayán arribeño* (highland *majayán*), whose seed is red and white. Allegedly introduced by an individual named Vélez, originally from Hidalgo, who died in Tajín, while working for Onofre Xochigua. We were unable to find anyone who still plants this bean.

*c. Frijol ancho* (wide bean).

šiuyúmin, šiuʔumín, šuyumín; no translation available.

*Phaseolus lunatus* L. (both local and highland forms); lima bean.

Climber, or prostrate on ground.

Two kinds recognized by informants; one considered native; the other, intrusive from the highlands. The former with a wide, flat, "dark" seed; the latter, wide, flat, white to cream. Borne in short (4 cm. pods), several in a cluster.

Native form usually planted in May or August; ripens 3 months later; highland form planted in August for November harvesting. Some do not distinguish the two kinds and recommend planting in May, July (Day of Our Lady of Carmen, July 16), August, or September. Three seeds dropped into a hole made with the digging stick; planted in the maize field, usually in the same row with the corn. Climbs the stalks of the latter, or odd tree trunks standing in the field.

In a wet year, the vine said to bear continuously; after a drought, it dries. Ordinarily, the plant lasts a couple of years and reappears later as a volunteer.

Little esteemed by informants; said to be "half bitter and not of good flavor," although the local form considered tastier than is the highland intrusive.

Grown on very small scale; usually not more than four or five plants in a milpa. May be sold by the liter or *cuartillo* (3 liters); maximum quantity sold, 1 to 3 *almudes* (12 to 36 liters). Marketed in Tajín and in Papantla, generally to individual households; occasionally stores in Papantla buy (by kilogram).

*d. Frijol amarillo* (yellow bean).

paluwa siqʔ; paluwa, *tripa;* siqʔ, *ratón;* mouse entrails. Known to one informant as *lenteja*, lentil.

*Phaseolus calcaratus*, Roxb.; rice bean.

A bush bean. Small "dark" (*sic*), yellowish seed; pod ca. 10 cm. long, borne in pairs.

Planted in August, in a maize field already well-grown; harvested in November; continues to bear until choked by weeds.

Grown chiefly for home consumption. Seldom eaten green; "the seeds are so small it is difficult to remove them from the pods when green." Considered most palatable fried. Seldom sold and then only in small quantity.

Said to have come from the highlands, about 15 years ago.

*e. Frijol de cuerno* (horn bean); *frijol largo* (long bean).

aktokóstapu (said to mean *norte de frijol* [*sic*], aktakóstapo, akalakóstapu (so-called "because it is dark"); lʌkòtstapu, lukústapu (lúkus, *hueso;* stapu, *frijol;* bone bean, referring to hardness). One informant says latter name applies to "half white" seeds, other groups of terms to black ones.

Cutler: *Vigna unguiculata* (L.) Walp.; Moore: probably *Vigna sinensis* (L.) Savi (No. 297); in any case, the two terms synonyms.

Seeds small, variously described as spotted (*pintitos*), cream, white, black. Long pod (20–25 cm.) borne in pairs.

A climber. Planted in May, June, August, between rows of corn. Generally extends along ground but climbs if support at hand.

Harvested at the end of 3 months and continues bearing 2 to 3 years. Moreover, after first planting, new vines appear as volunteers. One informant reports one harvest annually; another, continuous bearing.

Better flavor green than dry. Raised principally for home consumption; rarely sold.

Considered native.

*f. Frijol tripa de tuza* (prairie dog entrails).

išpaluwa sa·ka; paluwa, *tripa;* sa·ka, *tuza;* prairie dog entrails.

Cutler: *Vigna unguiculata* (L.) Walp.; Moore: *Vigna* sp. (No. 312).

Climber. Small black seeds in long (30 cm.) slender pod; latter borne singly, not in clusters.

Planted "any time of year," but especially in May (Holy Cross Day, May 3), August, September. Requires 3 months to mature. Unless in field with poor drainage, the plant dries after bearing, but sprouts anew. Stem of vine sometimes attains the "thickness of a finger." Ceases

bearing during cold weather; generally produces two to three times a year.

No data concerning quantity grown, but our impression is that planting is on very small scale.

Considered native.

### OTHER CULTIVATED LEGUMES

In addition to beans and their close relatives, a number of other Leguminosae are cultivated, and it will be convenient to mention them here.

*g. Pisum sativum* L. (No. 254), green pea. Planted in the milpa, between the rows of maize, on St. Michael's Day (September 29), or the day before Christmas. Not treated as a climber, but extends along the ground; weeded from time to time. Eaten both green and dry; not important in Tajín diet. Women sell young peas on a small scale, both locally and in Papantla. Considered native.

*h. Cajanus cajan* (L.) Millsp. (No. 95),[61] pigeon pea. Planted because "otherwise it does not grow." Shrub, which may attain 3 m. in height. Seeds eaten as though they were beans. Not grown in quantity; usually planted in house clearing. Presumably of African origin (Bailey 1:613), but apparently not of recent introduction in Tajín.

*i. Crotalaria longirostrata* Hook. & Arn. (*chipila*, No. 91). Cultivated from seed for its leaves and flowers, which are eaten as greens.

*j. Jícama*, whose raw tuberous root is popular in many parts of Mexico, presumably is a species of *Pachyrhizus;* we collected no specimen. Seed planted in maize field; 3 or 4 dropped into hole punched with the dibble, the Day of St. James (July 25). Not of great importance. One man plants in sufficient quantity to sell, but he happens to be a highland Totonac resident in Tajín. Of 39 households, only one claims to plant *jícama*, and it boasts a single vine. Nevertheless, the raw root often included in food offering prepared for the dead on All Souls' Day. In view of modest local production, probably most Totonac purchase for the occasion in Papantla.

In addition, several trees and shrubs of the bean family are cultivated: three for food, one for medicine, and one as a hedge or fence.

*k. Erythrina americana* Mill. (*pichoco*, No. 284). Grown from cuttings, in house clearing; planted in February or March, when the tree is in flower. Buds and blossoms eaten (p. 162). A related wild form (No. 121) not utilized.

*l. Inga paterno* Harms (*chalahuite*, No. 195). Tree planted from seed, in maize field or house clearing, in June or July, during heavy rains. Fruit edible (p. 163), as is that of a wild form (No. 181).

*m. Leucaena glauca* (L.) Benth. (*lelekes*, No. 196*a*). Tree planted from seed; found in house clearings and maize fields. Fruit edible, as is that of wild form (No. 38).

*n. Caesalpinia pulcherrima* (L.) Sw. (*flor de mechuda*, Nos. 55, 115). Planted in patio or milpa, usually the former. No wild form found locally. Flowers and leaves considered medicinal; showy red and yellow blossoms used to adorn family shrine.

*o. Gliricidia sepium* (Jacq.) Walp. (*muite*, No. 123). Grown from cuttings; planted along edges of fields, as a sparse hedge or fence. Said to have been introduced ca. 15 years ago; provenience unknown.

### CUCURBITS

A number of cucurbits are grown locally, usually between the rows of maize. A hole is punched with the digging stick, several seeds are dropped in and the earth is brushed over them with the tip of the dibble.

Two principal kinds of squashes and/or pumpkins are recognized by informants, the *calabaza* and the *pipián*. Of the former, only the flesh is eaten; of the latter, only the seed is used, generally toasted and ground, and added to sauces. At least one kind of *calabaza*, probably that described below, under *b*, produces twice a year. Seed often is stored, wrapped in a cornhusk. Before planting, that of *calabaza* is not artificially germinated, but *pipián* seed is soaked in water, then wrapped in a leaf (No. 188) and left for 4 to 5 days until it sprouts.

Dr. Cutler indentifies the *calabaza* as *Cucurbita moschata* Poiret, and adds that from "the seeds alone, it seems to be related to the tan and cream-color 'ayote' of Central Guatemala." Informants recognize four different kinds of *calabaza:*

*a.* One, called nípši?, may be pear- or apple-shaped. The fruits are ochre-colored, with smooth skin and shallow ribs. Both forms are said to be produced on the same vine.

*b.* A second *calabaza*, known by the same Totonac name, probably is to be identified with the *calabaza de bola* (No. 278). It is flattened globular in shape, and the color is about the same as that of the preceding, although the skin is rough and pebbly; the ribbing also is deeper.

*c. Calabaza larga* (long squash) (akstúntuyu nípši?; akstúntu, gourd) is another form, of which we were unable to obtain a specimen.

*d.* A soft-shelled type, known as li·šút?, is said to be indistinguishable in appearance from the first described

[61] A sample of pod and seed sent Dr. Cutler was identified as soybean. Moreover, Dr. Cutler noted that there "are several loose seeds in this packet. One is *Phaseolus vulgaris* and three are probably small seeds of either *Dolichos lablab* L. or an extremely small form of *Vicia faba*." When the soybean determination was questioned, Dr. Cutler felt that "flower color and plant height" probably were determining factors; both the latter clearly indicate *Cajanus*.

form. "Unless someone remembers what kind of seed he planted, he does not recognize the li-šút? until it is cooked."

*Pipián* has a larger seed than the *calabaza*, and it is rimmed with gray. It has been identified by Dr. Cutler as *Cucurbita argyrosperma* Hort., a new species, closely related to *C. moschata*.

Gourds are planted in the maize field the Day of St. Bartholomew (August 24). Three forms are common: globular (*jícara*, kaši); elongated, necked (*guaje*, or *de pescuezo*, akstúntu), and banjo-shaped (*cuchara*, spoon; no Totonac name). All have been identified by Dr. Cutler as *Lagenaria siceraria* (Molina) Standley.[62] Gourds are not eaten, but the dry fruits are used as household receptables—bowls, plates, water bottles, dippers, and so on.

Other cucurbits are of slight importance. The *chayote*—both smooth-skinned and whiskered—is grown by a few families, but the fruit is not tasty. A sweet melon (*Cucumis melo* L. var. *chito* Naud., No. 361), is planted in December or January and is harvested in summer. It is eaten raw, but seems to be little grown. Watermelons (*sandías*) of three kinds are described: one with red flesh and reddish seeds; another, red with black seeds; and still another, "white," with black seeds. The latter form is said to be "half bitter," but edible. As usual, it is grown in the maize field, allowing about 5 m. between plants "because they spread." One informant plants the Day of St. Anthony (January 17); another, some time between February and May, for August harvest. Watermelon is not grown for sale, and production is slight.

Another member of the same family—which, from description, Dr. Cutler believes to be "*Sicana odorifera*, probably a native of Brazil"—is sold in the markets of Jalapa and Huauchinango as *calabaza de melón*. It has not penetrated Tajín very thoroughly, but one family planted it in considerable quantity a few years ago; another tried the plant for the first time this year. In time, it may become more general.

[62] Concerning the *jícara*, Dr. Cutler writes that this "is the most interesting of the gourd material . . . for the seeds are very similar to a few that Dr. Carl Sauer showed me from Pueblo sites in Arizona and which I have seen in another collection of about 800 A. D. from Arizona, but nowhere else. The more corky ridges or shoulders are typical of African and Asiatic gourds but are not pronounced in pre-Colombian gourds of America."

The *Momordica charantia* L. (No. 197) receives the touching Spanish name of *amor* (love). Occasionally someone plants and later sucks the seed of the ripe fruit, but this custom is very limited.

### STARCHY ROOTS AND TUBERS

The Totonac are well supplied with starchy foods produced beneath the ground. Of these, the sweetpotato and manioc are of most importance, the yam less so. In addition, local cultivates include an arum and the Bermuda arrowroot.

#### MANIOC

Sweet manioc (*yuca*) is planted in late fall, into February. The Day of St. Lucas (October 18) and Kings' Day (January 6) are mentioned particularly.

The bitter form is unknown, but two kinds of sweet manioc are recognized—both edible and both bearing the same native name. One (*Manihot esculenta*, No. 240) is narrow-leaved, with the root white-fleshed; the other has a wider leaf and yellow flesh. The former is considered the more tasty and sometimes is sold in Papantla, reputedly to be used in the manufacture of starch.

It is claimed that animals—such as pigs and turkeys—eat the raw root with fatal results: "they eat it 1 day and 2 days later they are dead." The flesh of such animals is considered inedible. However, if the root is cooked, animals may eat it without ill effect.

When the leaf is shed—generally "about All Souls' Day"—the manioc is ready to be harvested. The stems are hacked off with a machete, and with the digging stick the soil is loosened about the roots and the latter removed from the ground. The stems are cut in short lengths and used as cuttings. Either men or women plant. A hole is made with the digging stick, the cutting is laid flat within it, and is covered completely with soil.

Most families have a few plants of manioc. They may be in the house clearing but more often are in the maize field. If the plants are few, they may be scattered; but it is said that an effort is made to plant in rows if there are as many as 20 cuttings. We have seen no field with more than a sprinkling of plants. It is necessary to

place manioc toward the center of the milpa, for "it will not grow along the edges." At the end of a year, it is ready for harvesting and the cycle starts anew. If left unduly long in the ground, the root becomes so woody that it cannot be eaten.

### SWEETPOTATO

Three kinds of sweetpotato (*camote*, *Ipomaea batatas* (L.) Lam., No. 260) are distinguished on the basis of color: white, whose tuberous root has white skin and white flesh; yellow, with yellow skin and flesh; and "purple." Of the latter, there are two kinds, one with reddish skin and flesh, and another with reddish skin and white flesh.

The sweetpotato is planted in the maize field, between December and February. Either the root or cuttings may be used; "it is the same." A single plant has an extraordinary extension and, as one lad remarks, "one plant covers all the milpa." Usually, one is sufficient for the needs of a household, and we know no family with more than four plants.

Of 37 families, 16 do not plant sweetpotato; 6 grow only for their own use; 5 still are not harvesting; and the rest generally have a small surplus for sale. The yield from a single plant cannot be calculated accurately, for harvesting takes place little by little, starting with All Souls' Day, early in November, and continuing through February, as needs arise. One informant thinks he obtained about 2 *almudes* (24 liters) from his two plants; another, 3 *almudes* (36 liters) from a single plant. The sweetpotatoes are collected in large wooden trays and generally are sold by the *cuartillo* of 3 liters; the price varies from $0.50 to $0.65 pesos a *cuartillo*.

### YAM

The yam (*cabeza de negro*, *Dioscorea alata* L., No. 299) is said to "grow anywhere," to be planted "any time," and to be available as food throughout the year. Either the tuberous root or one of the protuberances which form on the stem of the vine is planted, usually in the spring, adjacent to a tree on which the plant may climb. Frequently the aerial tubers fall to the ground and take root without further ado. It is they which are eaten, rather than the rhizome.

### ARUM

Another starchy plant, known only by the Totonac name of pisís, has been identified as an arum (No. 4). The corms are planted in December, along the edge of the maize field. They are eaten, but the leaves are said not to be edible.

### ARROWROOT

A further starch plant is Bermuda arrowroot (*perritos*, *Maranta arundinacea* L. (?), No. 227), whose edible tuber is planted in February, along the edge of the maize field.

### POTATO

The common potato is not grown at Tajín. However, it is said that some years ago an enterprising soul tried planting and "a very good harvest resulted." But he no longer is a resident, and his example has not been followed.

### CHILI

The Gulf coast evidently has been a source of chili since pre-Cortesian times. Anciently, Tuxpan and Papantla, together with other pueblos of the same general zone, paid 800 loads of dry chili annually as tribute to the Mexicans (Colección de Mendoza, 5:87). That there was no diminution after the Spanish Conquest is clear from a report of 1799 (D. P. E. P., p. 28), which states that Papantla and several other towns are heavy producers of chili. Five years later, chili is mentioned as a major crop at Papantla, along with maize, beans, and cane (Relaciones estadísticas de Nueva España, p. 45).

Tajín produces two kinds of chili. Of these, the more important is the small, wild, excessively hot form, which appears as a volunteer in the maize fields. Our herbarium specimen (No. 214) has been determined as *Capsicum frutescens* L.; but, on the basis of recent studies, Dr. Charles Heiser, Jr., considers this chili a variant of *C. annuum*. Sometimes, seed is tossed broadcast into the milpa to insure a heavier crop. This essentially wild product is collected in quantity and may have been the chili which was given as tribute to the Mexican overlords. Its exploitation has been described previously (p. 82).

Of cultivated chili,[63] there is only one kind, determined by Dr. Heiser, as "some form" of *Capsicum annuum* L.; when green, it is known as *chilchote;* when dry, *chilpoctli.* One informant recommends planting in November or December; another suggest Kings' Day (January 6) or Candlemas (February 2). In any case, 6 months are required for the fruit to mature. If there is room for a separate plot (*chilar*, ka ʔpínin) in the cornfield, the chili is planted by itself, in rows. If not, it is inserted among the maize, wherever there is a bit of room, although in this the chili yield is less.

Some, if not all, soak the seed before planting. It is left overnight in a cup of water; in the morning it is drained and is wrapped in a leaf (Nos. 3, 188), and the small bundle hung for 4 or 5 days. By the end of that time, it should sprout. A hole for the germinated seed is punched with the dibble—not more than 5 cm. deep, "otherwise the seed will rot." Unlike bean seed, it is covered with soil.

Chili apparently is considered rather "delicate" to grow. Often the seed does not remain viable for more than a year; and once planted, it is subject to damage by crickets and *arriera* ants which "do not leave it in peace." Moreover, it is highly sensitive to "eclipse," and red rags are placed in the field as protection against this hazard. Several report having attempted unsuccessfully to grow chili, and probably not more than half a dozen raise it in sufficient quantity to sell, although a good many families have a few plants for personal use.

At least three people in Tajín grow chili on a sufficient scale to warrant having a special "oven" to dry the fruit; one which we examined belongs to José María García, and may be described as follows:

On a low rise adjacent to his house, he apparently has leveled a small area and into it has cut vertically a trench whose opening at the surface is approximately 2 × 3 m. However, all four walls are said to converge toward the bottom, so that the profile looks like that of an inverted, truncated pyramid. A short tunnel cut horizontally into the slope of the hill connects with the floor of the trench, and, through this tunnel, fire is maintained on the floor of the main excavation.

On the surface, along each end of the main trench, four saplings are laid on the ground. They support a series of split bamboos, running lengthwise, which at the same time roof the trench and form a floor over it on which the chili is spread to dry. A narrow pole is laid on top of the series of bamboos, at each end, and an inverted forked stick, driven securely into the ground, holds each end of the terminal pole in place. The whole structure is topped by a gabled palm roof, supported by a frame of forked sticks.

As the heat from the fire on the floor of the trench rises, it warms the bamboo floor. Chili spread on it is said to require about 8 days to dry, following which it may be marketed in Papantla.

### OTHER CONDIMENTS; MEDICINAL PLANTS

Apart from chili, several plants are cultivated chiefly for use as condiments. They are enumerated below, in order of importance; the goosefoot presumably is native, the others, Old World.

*a.* Coriander (*cilantro, culantro;* no native name). Planted in the milpa on All Souls' Day or on the Day of St. Andrew (November 30). Slight cavity made for the seed, which then is covered "with very little earth, so it will not rot." Once planted, it generally reseeds itself. Green or dry, coriander is almost as indispensable to Totonac cooking as is chili.

Apparently another form of coriander is known as *cilantro extranjero* (*Eryngium foetidum* L., No. 276). Said to be available, presumably green, all year; "it never ends."

*b.* Goosefoot (*epazote, Chenopodium ambrosioides* L., No. 75), another popular condiment; also medicinal. A few plants grown in the house clearing or in the maize field.

*c.* Fennel (*anís, Foeniculum vulgare* Mill, No. 88); seen frequently, in small quantity, in the milpas.

*d.* Mint (*hierbabuena*); cultivated as a condiment and as a medicinal plant.

In addition, several plants are grown primarily for medicinal use. *e–h* generally are found in house clearings; the others, either there, or in the maize field.

*e. Bixa orellana* L. (No. 78).

*f.* Ginger (*ajengibre, Zingiber officinale* Roscoe, No. 32).

*g.* Basil (*albahaca, Ocimum* sp., No. 318). When not available, a related form (*Ocimum micranthum* Willd., No. 319) is substituted.

*h.* Rue (*ruda, Ruta graveolens* L., No. 317).

*i.* Mustard (*mostaza, Brassica nigra* (L.) Koch, No. 102).

[63] Other varieties of chili have been tried in Tajín with little success. One, known as *pico de pájaro* (bird's beak), Dr. Heiser and Dr. Paul Smith consider a form of *C. annuum.* In Tajín, "it does not grow well because the ground is hard; it does better in Espinal." Several have tried to grow *chile ancho* (broad chili). For one planter, the bush was "very, very small." Another, whose seed did not germinate, lays the blame on the traders from the highlands who, she suspects, deliberately "sell the chili already cooked."

*j.* A form of hibiscus (*semilla de culebra, Hibiscus abelmoschus* L., No. 33), used to treat snake bite and rabies, is cultivated by prudent families, so that it may be handy in case of emergency.

### MISCELLANEOUS CULTIVATES

In this miscellaneous category we have placed sesame and the physic nut, both grown for their oil; cacao (no longer cultivated); coffee; tobacco; pineapple; a fruit of the milkweed family; and assorted garden vegetables not included elsewhere.

#### SESAME

Seasame (*ajonjolí;* no Totonac name) is not planted in a separate plot, but along the edges of the maize field. Seed may be scattered broadcast, or it may be planted in a shallow hole made with the dibble. Between 12 and 15 seeds are dropped into the cavity and the soil knocked over them with the tip of the digging stick. When planted thus, 5 or 6 paces are left between each cluster. Care is taken not to plant among the maize; "sesame grows more rapidly and chokes the corn; it kills it."

Of 38 families, 2 have no milpa and no place to plant; of the remaining 36, only 5 grow sesame. The quantity of seed planted is slight, varying from 0.5 to 3 litros. Most grow for personal consumption, but any excess—6 to 10 litros—is sold in Papantla, where the price is said to be $0.30 or $0.40 pesos a kilogram.

One disillusioned planter remarks that he tried sesame but that it dried "for want of water." Most seem to feel that it does well locally, and Pedro Pérez comments that "one could become rich, selling only sesame." He adds cheerfully that no one attempts to do so. As a matter of fact, it is not impossible that sesame might be worked into a pretty fair cash crop in Tajín—provided the danger of its cutting into maize production could be avoided.

#### PHYSIC NUT

Another plant grown exclusively for its oil is the physic nut (*piñón, Jatropha curcas* L., No. 192). It is said not to occur wild. Although not planted on large scale, most families have a few shrubs in the clearing about the house. Elsewhere this euphorbia generally is known as a purge, but in Tajín, its laxative properties are not recognized, and it is considered a food.

Planting takes place in January (for example, Kings' Day, January 6) and harvest, "about All Souls' Day." Either seed or cuttings will grow, but as usual, the Totonac prefer the latter. In 1947, a small harvest was predicted "because the wind frightened the blossoms." Both woodpeckers and squirrels are said to consume the seed with relish. Three or four, sometimes five, seeds are produced in a "ball." The outer covering is removed and the seed is dried, shelled, toasted, and ground on the milling stone. The pulp and oil are added to a variety of dishes.

#### CACAO

Although cacao is reported for the Papantla area about the middle of the sixteenth century (Suma, No. 449), its cultivation evidently languished during colonial times. None is grown at present in Tajín, but Lorenzo Xochigua remembers having seen some plants when he visited the Tuxpan area.

#### COFFEE

Coffee (*café, Coffea arabica* L., No. 161) is raised locally, and a number of families have small plantings for home consumption; none is sold. Ideally, coffee is planted in rows, although this seems to be theory rather than fact; about two houses, owing to volunteer growth, the shrubs have formed a veritable thicket. The entire fruit is placed in the sun to dry and, in time, the hull falls off. The thin inner skin is removed in the course of grinding the bean on the milling stone.

#### TOBACCO

It is said that tobacco (*tabaco*, probably *Nicotiana tabacum* L., No. 277) was grown formerly, "but it does not grow well here; it does better about Comalteco and Gutiérrez Zamora." However, tobacco once was sufficiently plentiful at Tajín to receive official recognition, and a 1785 report (Gazeta de México, p. 349) reports that effort is being made "to exterminate the plantings of tobacco."

#### PINEAPPLE

At least one family has a few rachitic plants of pineapple (ma·ɬaɬa, ma·ɬat) in the house clearing. Either the stock is poor, the terrain not

suitable, or the care inadequate. In any case, this fruit is not common in Tajín, and the few plants we have seen are not flourishing.

### CAHUAYOTE

*Cahuayote* (*Gonolobus niger* (Cav.) R. Br., No. 124) is found chiefly in the *monte*. However, because of its edible fruit, it sometimes is planted in the milpa or in the house clearing, adjacent to a tree up which it can climb.

### VARIOUS VEGETABLES

In our sense of the word, vegetables are little grown in Tajín. The tomato is important, but dependence is upon a wild form. Green peas have already been mentioned, as have green beans. Tronchuda cabbage (No. 285) is grown by very few people; "not everyone likes this plant." Amaranth (Nos. 104, 105) is essentially wild, but occasionally one tosses a bit of seed into the milpa; the young leaves are eaten as greens. Two kinds of onion (*cebolla* and *cebollina*, little onion) are grown in the milpa; garlic (*ajo*) is planted nearby, to protect the onion from the *arriera* ant.

### FRUIT TREES

The sixteenth-century Relación de Papantla reports native fruits "in quantity," but, of introduced fruits, only "oranges of Castille." Presumably the full repertoire of native fruits—representing a wide range of families—still is found, cultivated or semicultivated. Introduced fruits include the mango, several citrus fruits, and a wide assortment of bananas and plantains.

Fruit trees are planted either in the milpa or in the house clearing, generally the latter, for birds are less likely to attack the fruit and the trees can better be protected from the ravages of the *arriera* ant. The latter is troublesome and is combated without much success. The liquid in which the maize has been steeped with lime, preparatory to making tortillas, may be poured down the entrance to the subterranean nest. Sometimes a fire is lighted on top of the nest, and an effort is made to detain, with lighted brands, the ants which are headed for the fruit trees and other garden plants. At night, this undertaking borders on the spectacular, for the whole family turns out with lighted torches.

Eclipses also damage fruit trees. To protect them, at least one of our acquaintances inverts a bottle of dark glass at the base of the tree, on the east side, and buries the neck in the ground. As a general precautionary measure "so that the flowers will not fall," tree trunks are painted with a ring of lime (whitewash), 10 to 20 cm. wide. This takes place during Lent—on Ash Wednesday; or the first Friday in Lent; or the second Friday, "if one forgets."

Other than this, fruit trees receive a minimum of care. Grafting is little practiced and is confined to the orange, in the belief that a sweet orange grafted to the bitter is immune to attack from ants. In Tajín, only Juan Castro, originally of Papantla, knows how to graft; and it is said that any Totonac in nearby Gildardo Muñoz who wishes to have a tree grafted calls upon a resident of Papantla to perform the operation.

### NATIVE FRUIT TREES

The hog plum is an ancient American cultivate, widely spread, and is mentioned by a number of sixteenth-century authors, including Díaz del Castillo (1:171), who relates that in "Cempoala" the Spaniards were offered "baskets of plums."

A wild form (*jobo*, No. 186) occurs locally in *monte alto*, and although it produces edible fruit, no effort is made to plant the tree. The Totonac distinguish three kinds of cultivated hog plum (*Spondias purpurea* L., Nos. 290–292): red, yellow and *campechano*. The latter has no native name, and although an American domesticate, may be suspected of having been introduced locally in relatively recent times. All hog plums are planted from cuttings, taken when the tree is leafless and about to flower.

The red plum bears fruit of that color; the yellow and the *campechano* both have yellow fruit, but that of the latter is said to be smaller and of distinct flavor. The red and yellow bear in June, "about the time of Corpus Christi"; the *campechano* produces later, beginning in August and continuing through All Souls' Day. Any surplus fruit is sold, on small scale, in Papantla. The leaf of the yellow plum, perhaps also of the red is considered useful in treating skin disorders.

Another aboriginal domesticate is the papaya or pawpaw, whose seed is planted at the time of the full moon, "so that the fruit will be large." The

simplest technique is merely to toss a quantity of seed into the maize field, in the hope that a few plants may result. "Not everyone is able to plant *papayo;* some men and some women have good luck; for others, the fruit is very small." This may refer to the dioecious character of the papaya, of which most of the Totonac apparently are not aware. On the whole, the fruit does not do well in Tajín; often it is ill-formed and hard, and invariably of poor flavor. It is said, however, that formerly it was grown with considerable success.

We collected no specimen of cultivated papaya, but a local wild form, which crops up after *monte alto* has been felled and, subsequently in abandoned maize fields, has been identified as *Carica papaya* L. (No. 172).

A number of trees are known locally as *zapotes*, although few actually belong to the sapote family.

Of the latter, the *zapote mamey* (*Calocarpum sapota* (Jacq.) Merr., No. 350) is relatively scarce. According to one informant, seed is planted in August; another, in January. Nemesio Martínez has heard that a person who plants *zapote mamey* will die when the tree bears its first fruit, but he is unconvinced, since his mother took the risk and survived. The tree yields after about 10 years, and its fruit is available during summer months. Individual fruits are sold in Papantla at $0.20 pesos each; it is said that in the vicinity of Boca de Lima, this sapote is raised in sufficient quantity to be sold in lots of a hundred.

Another member of the same family may be considered semicultivated; it is the *zapote mante* (*Pouteria campechiana* (H. B. K.) Baehni, No. 220). Essentially a *monte alto* tree, the seed sometimes is planted in the maize field or in the house clearing, in November or December, which is when fruit is borne. After five years the tree produces; the fruit is eaten occasionally but seldom is sold.

The *zapote chico* (No. 191) is not cultivated, although both its fruit and its chicle sometimes are exploited (pp. 83, 162). The *zapote de calentura* (No. 198) may or may not be of the same family; it is another *monte* tree, uncultivated, whose fruit sometimes is eaten.

Of the persimmon family, the *zapote prieto* (*Diospyros ebenaster* Retz, No. 125) is planted from seed, in November and "grows anywhere." [64] After 5 years it starts to bear and fruit is available "about the time of Corpus Christi." A small amount is sold locally, but "no family has more than one or two trees."

The *zapote domingo* (*Mammea americana* L., No. 127) is an American cultivate but is said to have been unknown in Tajín until about 1900. "Because the tree gives nice shade," it sometimes is planted adjacent to the house. It is relatively rare and the little fruit which is produced is consumed locally.

We come now to two trees of the rose family. One is the *zapote cabello* (*Licania platypus* (Hemsl.) Fritsch No. 90), which is primarily a *monte alto tree.* "But some plant it, in October or November, when there is much rain." The edible fruit is produced "about All Souls' Day" and is sold in Papantla, where it reputedly is popular. Individual fruits bring $0.10 or $0.15 pesos; a "load," $8.00 pesos. At least two people in Tajín raise the fruit in sufficient quantity to sell by the load.

The *gurupillo* (*Couepia dodecandra* (DC.) Hemsl., No. 339) is another tree of the rose family which is cultivated half-heartedly. The fruit is collected when it turns yellow and is eaten raw; some sell, giving two or three fruits for $0.05 pesos.

The Totonac recognize three different kinds of avocado, each subdivided according to whether it produces green or black-skinned fruit. The seed of the "large avocado" (kukakλi) is planted in October or on Kings' Day (January 6) and begins to bear after about 8 years. The one yielding green-skinned fruit is called štákani kukvλił, and that which produces black-skinned, ¢e¢ake. The fruit is said to have more meat and to be of better flavor than that of the *aguacate oloroso* described below; and, in contrast to the latter, its leaves are odorless.

The *aguacate oloroso* (*Persea americana* Mill. var. *drymifolia* (Schlecht. & Cham.) Blake, No. 248) is regarded as quite distinct, owing to its aromatic leaves and its less desirable fruit. One form (kuka·ta štakčat) produces green-skimmed fruit; another (kuka·ta), black-skinned; the former is preferred. The tree is planted from seed and is said

[64] Standley (p. 1128) considers the *zapote prieto* native to the East Indies, "but widely cultivated in tropical America." He adds that the tree "must have been introduced into Mexico at an early date, for it is mentioned by the older writers. Indeed, some writers have been inclined to consider it a native of Mexico . . ."

to start bearing after 3 years. The fruit is eaten with a tortilla but is not considered tasty. The particular virtue of this avocado lies in its leaf, which is regarded as highly medicinal and is especially prominent in magical cures.

Another tree described as similar to the avocado is known as the *pagua* špaw; considered Totonac). Only one example is known to us in Tajín and it is immature; but several bearing trees occur in nearby San Antonio, where Totonac from as far away as Plan de Hidalgo go to buy. There is a firm belief that one who plants the *pagua* will die—according to some, when the tree blossoms, according to others, when it first bears fruit.[65] The fruit is described as "very large" and of distinctive flavor. It is said that the green-skinned form contains little fiber, while the black-skinned is generously endowed.

We have seen relatively few guava trees (*guayabo*, *Psidium guajava* L., No. 326). One informant says that the tree occurs both wild and cultivated; another, that it is not planted but appears as a volunteer, as the result of bird droppings. At best, it may be considered semicultivated. The fruit is eaten raw or cooked with sugar. The leaf is thought to be medicinal.

Passing mention may be made of the *anona* (No. 57), whose fruit sometimes is eaten. The tree is said not to be planted and again volunteers are attributed to bird droppings.

The calabash tree (*zacual*, *Crescentia cujete* L., No. 300) is grown in the yard, either from seed or from cuttings; it does not occur wild. There are two kinds, one bearing a large globular fruit, the other an equally large, but elongated fruit. Both are used extensively as household receptacles.

### INTRODUCED FRUIT TREES

The mango (*mango*, *Mangifera indica* L., No. 282) is planted from seed. The fruit is green-skinned, not yellow, and the entire supply is consumed locally.

Citrus fruits include oranges, *limas*, and limes. We know only two citron trees in Tajín, although all four fruits are reported in the late sixteenth century for a number of Totonac settlements (*relaciones geográficas* of Misantla, Hueytlalpan, "Matlatlan" and Chila).

The sweet orange is called smugly *naranjo criollo* (native orange; we recorded on Totonac name). It produces "about All Souls' Day," and is planted at that time, in the milpa or the yard. The bitter orange (*naranjo de cucha*) is said to grow unsolicited. The fruit is eaten fresh or is squeezed into water to make a refreshing drink. Both leaf and juice are considered mildly medicinal. A sweet orange grafted to the bitter is said to be immune to attack by *arriera* ants. As noted above, the Totonac do not know how to graft, but Juan Castro, a local resident originally from Papantla, performs the operation upon request. Recently grafted trees are surrounded by a circle of ash, to discourage the ants, and for the same reason a wad of cotton is tied around the branch just below the graft.

Most oranges are distinguished merely as bitter or sweet, but one Tajín merchant with more outside contact than average boasts, by his own account, one tree of each of the following oranges: *China*, *Japonesa*, Washington, *nave* (navel?), and *sangre* (blood), as well as *naranjo de cucha*.

Out of 38 families, 5 have no orange trees, but the others claim from 1 to 30 trees apiece. However, a good many are young trees which still are not bearing. Not many sell. One man, the owner of 22 trees, sold 300 oranges in 1946, for a total of $10.50 pesos. Other sales appear to be even smaller.

The *lima* is not the equivalent of our lime, although the name suggests it. We collected no specimen, but Martínez (1937, p. 279) lists the *lima dulce* as *Citrus limetta* Risso. The fruit is not prized locally and trees are not plentiful. Of 38 families, 26 have one or more *lima* trees, but with one exception, of 10 trees, no family has more than 4. The *lima* is sold on small scale by a limited number of families, generally those definitely in need of funds. The price may be as little as $1.00 peso a hundred.

The occurrence of the lime (*limón;* límúnʌš, considered Totonac; *Citrus aurantifolia* (Christmann) Swingle, No. 332) is negligible. Of the same 38 families mentioned previously, 2 have each a single tree.

Except for the orange, the introduced fruits mentioned above are grown in a very desultory

[65] This notion may be widespread, for Angel Palerm notes a similar belief, associated with the avocado, in Villa Guerrero, between Toluca and Ixtapan de la Sal, in the State of Mexico.

fashion. The banana and plantain, however, enjoy great popularity. That they play a major role in Tajín is clear from the fact that of 38 families, only 3 do not plant; and 2 of these have no cornfield, hence little opportunity. The number of trees per household varies from 1 to 200, with an average of about 50 per family. A single banana tree is reputed to produce 5 or 6 racemes annually, each of about 7 bunches (*manos*), each bunch composed of 10 to 20 individual fruits. One plantain (*plátano de Castilla*) yields 2 to 3 fruits to each *mano;* the other (*plátano macho*), 10 to 12.

Of the 35 families with banana and plantain trees, 12 consume their total crop. One household has only young trees, not yet in production; another is unable to harvest, because of the inroads of the prairie dogs; and a third states that his plantings have been choked by *monte*. However, the remaining families have a surplus which is sold, either in Tajín or in Papantla. Most sell on small scale, by bunches; two sell by the raceme of approximately 7 bunches; and two more market by the load (*carga*), each load containing 40 bunches. The price varies from $0.10 to $0.50 pesos a bunch, although one informant claims to have extracted $0.85. Most are unable to calculate the cash returns, since sales are on a small scale; $60.00 pesos is the maximum annual income claimed by any family of our census.

The Totonac have a bewildering assortment of bananas, in addition to two plantains; for none are we able to give botanical determinations. All are called by the generic term of seakna, with qualifying adjectives, either in Totonac or Spanish. Some are distinguished by color, some by form, others by presumed provenience. All told, 12 distinct kinds of banana and/or plantain are recognized: *morado* (tutoqosa, ¢u¢oko, so'qo seakna); *amarillo* (smukúko seakna); *verde* (kinia seakna); *moreno; enano* (tilín seakna); *durazno*, *pera*, or *bolsa; manzano;* Manila; Guineo; Roatán; *largo* or *Castilla* (kaná seakna; qanasa seakna); *macho* (kawi seakna). The two latter apparently are plantains. In general, Spanish terms are most used; the Manila banana, for example, is known merely as Manila seakna.

Bananas and plantains are grown from shoots which appear about the base of the trunk. The shoot is pulled out, together with the adhering "head" or root. The latter is placed in a cavity about 25 cm. deep, with the shoot emerging, not upright, but at a sharp angle. The root is covered with soil and, in time, the exposed shoot dies and a new, upright one replaces it. Planting takes place preferably on the Day of St. John (June 24) or the Day of Our Lady of Carmen (July 16). An effort is made to plant before dawn, when the moon is full, so that "large racemes of fruit" will result.

A novel technique is described whereby a shoot of *plátano de Castilla* will be converted into *plátano macho:*

> If one has only *plátano de Castilla* and wishes to grow *plátano macho*, he prepares the hole for planting. But instead of placing the head in it carefully, he stands well back and tosses it into the hole. It is planted in whatever way it may fall, and when it grows, it is *plátano macho*. It produces larger fruit, but in less quantity.

Almost every maize field has at least a few banana or plantain trees, and some have them in considerable quantity—interspersed with the corn, or in a long row along the path or the edge of the field. They are not planted in separate plots. In about a year, the tree produces its first fruit and may continue bearing as long as 15 years. Local bananas and plantains seem surprisingly free of disease.

## COTTON

Native perennial cotton is grown occasionally in the yard or in the maize field; it does not occur wild. Since culinary and medicinal uses are minor, cotton is raised almost exclusively for its fiber. However, weaving is on the decline in Tajín; less than a dozen women in the entire community know how to spin and weave, and they find it less trouble to buy commercial thread. As a consequence, there is virtually no interest in the native cotton, and it is not unlikely that within another decade the plant may disappear completely.

In ancient times, the Gulf coast figured as an important source of cotton and of cotton textiles. Papantla and Tuxpan paid the bulk of their tribute to the Mexican overlords in textiles of various kinds (Colección de Mendoza 5:87), and in the late sixteenth century, the Totonac of Papantla dressed in cotton clothing (Relación de Papantla). About this same time, an abundance of cotton was reported for the Totonac of Misantla, where cotton armor was manufactured exclusively as an ar-

ticle of commerce (Relación de Misantla); and, according to various *relaciones geográficas*, the Totonac of Jojupango, "Matlatlan," Chila, and Hueytlalpan all produced an excess of cotton which they sold to buyers from other zones.

Hueytlalpan is said to have planted and harvested cotton only every other year, which does not imply a perennial variety; Jojupango, on the contrary, is said to have had fiber available annually. As an aside, it may be noted that the sixteenth-century Maya are credited with a small annual form, as well as with a large shrub which endured 5 or 6 years (Landa, p. 246).

At Tajín, most informants recognize two kinds of cotton—a white and a brown lint,[66] with the former preferred. A few seeds may be planted the Day of the Holy Cross (May 3), and "it is not long before they produce."

Five lots of cotton seed from Tajín were sent Dr. J. B. Hutchinson, of which only two germinated, both of white lint. One specimen he reports to be "fairly typical *Gossypium hirsutum* var. *punctatum*, of the Gulf of Mexico race.[67] Staple about 1 inch, poor quality." Dr. Hutchinson adds that this cotton is "fairly typical of the cottons of the Mayas" and that it is "the dominant cotton of Yucatán, Campeche, the Petén region of Guatemala, and British Honduras. It is also the perennial cotton of Florida and the Bahamas, and is believed to extend round the shores of the Gulf of Mexico from Honduras to Florida."

The other specimen is "an aberrant member of *G. hirsutum* proper, nearest *G. hirsutum* 'Upland,' but with quite extraordinary development of vegetative branches. Staple about 1 inch, poor quality." Dr. Hutchinson adds that this is a "unique type in my experience . . . in a class to itself."

In addition, a number of pressed specimens of leaf and flower were submitted to Dr. Moore. Of this lot, four (No. 8) are *G. hirsutum* L.; and four more (No. 9) are *G. hirsutum* L., var. *punctatum* (Schumacher) J. B. Hutchinson. However, a lone specimen (No. 43) has been identified as *G. barbadense* L., a cotton found chiefly in South America and the West Indies.

In short, one of our local cottons (*G. hirsutum* var. *punctatum*) is within its normal range; and another (*G. hirsutum* "Upland") is probably a more recent arrival in the area. The third cotton (*G. barbadense* L.) is, however, definitely intrusive, and its presence among the Totonac presumably implies contact, direct or otherwise, either with the Caribbean or with Central or South America.

### GRASSES

Several grasses are grown in Tajín, for thatch, for animal food, or for both.

*Zacate colorado* (*Imperata contracta* (H. B. K.) Hitchc., No. 275) is useful for thatch but cannot be used as fodder "because it is very dry." It is said to reproduce through runners. A few plants may be stuck in an unoccupied corner of the maize field, and 10 yield sufficient grass to thatch a dwelling. One informant speaks of *zacate colorado* as thatch, but considers it not cultivated. Others distinguish between *zacate colorado* and another species known as *zacate de venado* (No. 288); the latter "looks like *zacate colorado* but is not; it is not good for anything; it may come out in a milpa and ruin it."

Two other grasses, *zacate paral* (*Panicum purpurascens* Raddi, No. 243) and *zacate guinea* (*Panicum maximum* Jacq., No. 245) are grown for fodder. The latter, either green or dry, also is used for thatch. Both are introduced, and informants know, at least, that the *zacate paral* is intrusive. The latter is said to produce seed "which does not grow"; seed of the *guinea* may be planted, "but it takes a long time to grow." Sometimes a few plants are placed in rows in the milpa; "two or three months later fodder is cut."

Still another grass, *zacate fino* (*Cynodon dactylon* (L.) Pers., No. 351) is grown from seed, in the house clearing, so that fowl may eat the seeds.

Sometimes a bit of sorghum (*Sorghum vulgare* Pers., No. 103) seed is tossed into the milpa. The plant, with the seeds removed, is tied in bundles, to serve as brooms.

The large bamboo (*tarro*, *Guadua aculeata* Rupr., No. 180) grows luxuriantly along arroyos

[66] Similarly, the Popoluca, to the south, have a white and a brown lint cotton; the later is known as *criollo*, or native (Foster, 1942 b, p. 19).

In Tancanhuitz, in the Huasteca, we were told that only the Indians grow a brown lint cotton. In the mestizo town of Tancanhuitz, we saw only one perennial, white lint shrub, but the seed is said to have been brought from Axtla, also in San Luis Potosí. Farther south, in Tamazunchale, there are several plants of white lint perennial cotton.

[67] The distribution of the various cottons mentioned in this section will be found in Hutchinson, Silow, and Stephens, figures 9, 10.

in Tajín. It is not cultivated, and the supply now is greatly diminished, owing to demands for house building. However, it is said that in the Totonac settlements of Talaxca, north of Papantla, a smaller cane (koškíwi), not hollow, often is planted during the rainy season, and is used in basket making. This cane does not occur at Tajín, either wild or cultivated.

### GARDENS

The clearing which surrounds the house or the cluster of houses is the patio. It is bounded by *monte bajo*, rarely by anything resembling a fence. Within the patio, stand a few trees of the *monte* which have been spared—for shade, for decoration, or for some other reason. Most patios, for example, have a *chote* tree (No. 10), cropped so that it grows in a squat, mushroom form, and on top of it laundry is spread to dry.

Generally the yard boasts a few fruit trees, one or more shrubs of physic nut (No. 192), perhaps a cotton plant, a calabash tree, a bit of cane, and a variety of other plants already noted as grown in the house clearing. Often there is a small assortment of herbs, such as goosefoot, rue, or basil (Nos. 75, 317, 318).

Gardening possibilities in the patio are limited. The *arriera* ant presents a chronic hazard, and several women have made special pottery devices to protect their plants. They may be described as hollow doughnuts, bisected laterally.[68] One of these circular vessels is placed on the ground, enclosing the young plant. The cavity is filled with water and the ants are unable to pass.

Apart from the depredations of the *arriera* ant, domestic animals—fowl, pigs, dogs, and cats—run free. As protection, an old clay pot, innocent of base, may be inverted over a young plant. However, the flowerpot, and informal substitutes for it, are conspicuously absent in Tajín, although, by and large, they are highly characteristic of most Mexican communities, urban and rural. The Totonac simply do not grow plants in containers. Sometimes small sticks or split bamboos are stuck in the ground close together and form an enclosure about a tender plant. Occasionally, a small plot for flowers is fenced by upright poles or by bamboos, placed sufficiently close that fowl cannot penetrate.

Most families make an effort to have at least a few flowers growing in the patio, and many take pride in their small, well-stocked, and somewhat disorderly gardens. Girls wear flowers in their hair; young men decorate their hats with them; and there is a considerable demand for flowers to ornament the family shrine. On the whole, women seem to take more interest in flower gardens than do men, and, occasionally, a woman has requested that we bring her seed from the capital. In at least one case, a small flower garden was abandoned completely following the death of the woman of the household. However, men too are fond of flowers, and one, Matías Pérez, professes such profound affection for them that he informs us, not entirely truthfully, that three of his children are named, respectively, Flora, Florencia, and Florencio.

We made no attempt to list systematically the flowers found in Totonac gardens. Often plants are uprooted in the *monte* and brought home to be transplanted—as, for example, a beautiful climbing verbena (No. 201). Not infrequently, orchids are brought to the house and affixed to a nearby tree.

Flowering trees and shrubs are extremely popular—particularly the *flor de mechuda* (Nos. 55, 115) and the handsome *flor de mayo* (No. 151), which comes in various tones of cream, rose, and red. The *chanacol* (No. 153) also is common, but one thinks twice before planting it, for if this tree (perhaps only the red-blossomed form) grows in the patio, the daughters of the family "will not turn out well. They will not marry properly, but will go off with some man." The *mirasol* (No. 120) is infrequent. All flowering trees are planted from cuttings, and almost any small branch stuck in the ground will take root. However, a cutting which is brought home and taken inside the house prior to planting will not grow. It is possible that this belief applies specifically only to a form of hibiscus.

Common garden flowers include many kinds of roses, various plants disguised under the blanket term of jasmine, begonias, hibiscus, several kinds of lilies, what apparently is mock orange, and a great many more: *adelfa*, *chisme*, *mariposa*, *ilusión*, *lluvia*, *mechuda*, and so on. A few decorative garden plants, selected very much at ran-

[68] Precisely the same sort of pottery protector for plants is found in mestizo communities in Jalisco and in Acatlán, Puebla (p. 218).

dom, appear in Appendix C (Nos. 76, 83, 115, 117, 120, 129, 151, 153, 201, 256, 261, 270, 289, 308, 328, 344).

## REMARKS

Although southern Totonacapan bore the brunt of early Spanish impact, northern Totonacapan was relatively immune and continued pretty well isolated until recent years. Nevertheless, it is obvious that the Totonac of the Papantla area must have had widespread, if indirect, contacts, through which a large series of plants native to both the New and Old Worlds reached them.

Maize, the staple food, is an ancient American cultivate, although its point of origin still is a moot question. In general, the corn collected in Tajín seems to have southern ties, and Dr. Anderson sees in it elements which suggest both the Isthmus of Tehuantepec (ftn. 34, p. 103) and Guatemala (ftn. 41, p. 105); above all, he sees significant "primitive South American influence" (p. 105). Historically, a negative aspect may be important—namely that the Papantla area of Totonacapan seems not to lie on the corridor by which "the big butt, yellow kernel, broad kernel, big shank, 8-row" maize[69] diffused from the Maya zone to the eastern United States (p. 105).

Vanilla, the chief cash crop of the Tajín Totonac, undoubtedly is a native American cultivate, although we suspect that its exploitation in the Papantla area is not of great antiquity. Sugarcane, the companion cash crop, is of Old World origin, but early was incorporated into the economy of the Gulf coast Indians.

Of cultivated legumes, both native and introduced forms are represented. Six kinds of beans and near-beans are grown by the Totonac, of which three (*Phaseolus*) are native to the New World; three others (*Phaseolus*, *Vigna*), to the Old.

The American beans include two kinds of *Phaseolus vulgaris* L., and one of *P. lunatus* L. There seems to be no general agreement concerning the precise origin of either species, although McBryde (pp. 135–136) makes a fairly good case for Guatemala.

Of intrusive forms, the presence of *Vigna* perhaps is not surprising, for this genus has diffused widely. However, the occurrence of the rice bean (*Phaseolus calcaratus* Roxb.) is less easily understood. Believed to be of Asiatic origin, it is cultivated "sparingly" in India and China (Bailey 3:2575). Even in its supposed native land, it enjoys scant popularity and is not likely to have reached Mexico through modern commercial channels. It is not impossible that it may be a casual byproduct of the Manila galleon trade. The Totonac claim to have known this bean only 15 or 16 years and consider it intrusive from the highlands.

The pigeon pea (*Cajanus cajan* (L.) Millsp.) is another member of the bean family which goes back ultimately to an Old World source. It is raised widely in tropical Africa and Asia and is said to be a staple food in southern India. The pigeon pea may be widespread in Mexico; it is grown in central Chiapas[70] and specimens have been collected in Tepoztlán, Morelos (Cravioto and Miranda, No. 211).

Other cultivated legumes include assorted vines, shrubs, and trees. All these appear to be native, except the common green pea, which is raised in negligible quantity, and perhaps the *flor de mechuda* (*Caesalpinia pulcherrima*), which is widespread "in the tropics of both hemispheres" and whose native habitat has not been determined (Standley, p. 424).

Likewise among the cucurbits, both native and introduced forms occur. However, all the important ones—*Cucurbita moschata* Poiret, pre-

[69] Historically, another aspect of yellow corn is of considerable interest. In the old Huasteca—at least, in the Tancanhuitz-Tamazunchale stretch—yellow maize is preferred, and in the markets, one sees three or four lots of it to every one of white. Provided this preference for yellow corn proves to be general in the Huasteca, the implications may be significant.

In Mexico as a whole, yellow corn seldom is popular in the lowlands, but to this rule, both the Maya and the Huasteca present an exception. The linguistic relationship between the two languages is generally accepted; moreover, at least one ear of maize, collected by us in the southern part of the old Huasteca, is matched by specimens from Yucatán (verdict of Dr. Edwin Wellhausen). Accordingly, it is barely possible that we have the survival of an old association between yellow maize and an ancient linguistic or ethnic group. Since the Huasteca presumably separated from their Mayan relatives before the efflorescence of classic Mayan culture, a considerable antiquity is implied, with, moreover, the possibility of approximate dating.

Our several samples of yellow corn from the Huasteca have been delivered for study to Dr. Edgar Anderson and Dr. Edwin Wellhausen.

[70] Unpublished information from Efraim Hernández Xolocotzi. The pigeon pea has become firmly established in the West Indies (Bailey 1:613) and is important in parts of Central America. Johnson (pp. 231–232, pl. 37) reports it for certain groups of the "Talamanca division," although Stone makes no mention of this cultivate among the Boruca. In Honduras, the pigeon pea is sufficiently prominent to appear in a list of assayed foods (Munsell et al., table 2).

sumably the closely related *C. argyrosperma*, and the gourd, *Lagenaria siceraria* (Molina)—are ancient in the New World. Evidence of *C. moschata* and of *Lagenaria* comes from a "preceramic, pre-maize horizon" on the north coast of Peru (Whitaker and Bird, p. 12), and both have been found archeologically in North America (*C. moschata*, Carter, p. 19; *Lagenaria*, Whitaker, p. 62). In fact, the seed of one of our gourds is said to be surprisingly similar to archeological specimens from Arizona (ftn. 62, p. 137). Our *C. moschata* "seems to be related" to specimens from central Guatemala (p. 136).

Of starchy roots and tubers, the Totonac have a fair share of New World cultivates—sweet manioc, arum, and arrowroot; in addition, they have the sweetpotato and the yam, which are known from both hemispheres.

The most important condiment in Tajín is the native, wild chili, in addition to which another form is cultivated. Goosefoot (*Chenopodium*) also is native, but coriander and fennel, both European, likewise are popular.

Of plants grown for medicinal use, the *Bixa* is New World; *Caesalpinia* (p. 147) has been mentioned above as of dubious provenience. However, several other plants—ginger, basil, rue, mustard, and a form of hibiscus—also are grown for medicinal use and appear to be of Old World origin. The Totonac attribute magico-medicinal properties to various plants with strong aromatic odor, particularly to the native aromatic avocado. In view of this association, it is possible that certain introduced plants of strong odor were accepted by the Totonac and were endowed with similar medicinal properties.

Fruit trees have been listed above with respect to supposed origin. There are numerous native forms, none raised on large scale nor with particular zeal. Of introduced fruits, undoubtedly the banana and plantain are of greatest economic significance, although citrus fruits are relatively plentiful and the mango also occurs.

Miscellaneous cultivates include both New and Old World plants. Among the former, may be mentioned the physic nut, tobacco, pineapple, and perennial cotton. If the postulated Asiatic strain in American cottons (Hutchinson, Silow, and Stephens, p. 437) be ignored, it may be said that all Tajín cottons are native to the Americas, but one species apparently has been introduced either from the south or from the West Indies (p. 145). Miscellaneous Old World cultivates include sesame, coffee, and various vegetables, such as cabbage, onion, and garlic. Grasses cultivated for forage and thatch apparently embrace both Old and New World forms.

So much for the provenience of Tajín cultivates. Although the Totonac have added a sizable series of Old World plants to their repertoire, the native American cultivates still are fundamental. And, despite the introduction of certain metal tools (ax, machete, and *coa*), the unembellished digging stick still is a basic implement.

One other aspect of Totonac agriculture likewise is outstanding, namely, the predilection for propagation through planting rather than seeding.[71] It may not be a matter of chance that the two Old World cultivates which have attained greatest importance in Tajín economy are sugarcane and the banana, whose propagation from cuttings and shoots accords well with the established local pattern.

Dr. Carl Sauer (letter, November 19, 1949) regards this preference as a circum-Caribbean feature, which contrasts sharply with the seed reproduction generally favored in Mesoamerica. He also suggests that the artificial germination of maize, chili, and one kind of cucurbit seed may be a reflection of this emphasis on plant rather than on seed. Unfortunately, we do not know the distribution of preplanting germination, which may be much more widespread than the literature indicates,[72] and which may prove a valuable clue to basic relationships.

Certain it is that the Totonac share a good many of the roots and tubers which are prominent in circum-Caribbean economy and which in both

[71] Pedro Armillas suggests, in conversation, that this may be a survival of the ancient "lowland agriculture" based on manioc, which Kidder (p. 121) suspects may underly "early Middle American civilization."

[72] The Totonac of the Zapotitlán de Méndez area, in the Sierra de Puebla, soak corn seed 4 days (information from Manuel Arenas). In the Tancanhuitz area of the Huasteca, maize is soaked prior to planting only when the season promises to be unusually dry (information from Tomás Martínez). However, in Panama, corn generally is germinated 3 days before it is sown (information from Hernán Porras); and in the Lesser Antilles, seed "is soaked for several days prior to planting" (information from Douglas M. Taylor). With these few exceptions, we have no record of artificial germination of seed. Such a trait might well escape attention in the field, unless specific inquiry were made or unless planting were observed first-hand.

areas probably contribute to the prominence of planting in contrast to seeding. It seems likely that the participation of Totonac women in agricultural activities is more Caribbean than Mesoamerican. Conceivably, the custom of not heaping earth about the base of the maize plant may prove to be another trait in common. Although today in the Lesser Antilles, corn is planted in hills (letter of April 2, 1950, from Douglas M. Taylor), the Taino did not share this practice (Rouse, p. 523).

Final conclusions concerning the affiliations of Totonac agriculture must await a series of thorough field studies in several strategic areas. These include, among others, the Mayan zone, where information on maize cultivation is gratifyingly complete but where companion crops have been slighted. We need detailed accounts of agricultural practices; and we need complete lists of cultivates, so that distributions may be more fully known. Such data should cast considerable light on culture history, and particularly on the history of native American agriculture.

## SUGGESTIONS

On the whole, the Totonac have developed a stable and highly satisfactory system of crop rotation, through successive plantings of maize and vanilla, followed by a long fallow period. It seems desirable that this be maintained, unless it can be demonstrated that an alternative system would be more advantageous and equally permanent. Presumably, it would be unwise to think in terms of continuous cropping, which might reduce the fertility of the shallow topsoil to a dangerous degree; nor need we consider irrigation, owing to the rugged terrain and the chronic lack of water. Because of the welter of roots and standing stumps in fields, it would be equally unrealistic to recommend use of the plow; and, in any case, removal of the *monte* by root perhaps is not advisable, owing to the danger of grassland incursion.

In short, it appears to us that the best course is to maintain the present agricultural system largely as it stands, but to suggest greater exploitation of certain existing crops, and the introduction of a few new ones which might be accorded to the current pattern of agriculture. Such suggestions fall into two categories, those designed to improve nutrition, and those whose objective is to provide a cash crop to supplement vanilla and sugarcane.

In a later section (pp. 166–171), diet is treated in some detail, and here it will be necessary to anticipate that discussion. Evidently the Totonac are abundantly provided with starches and probably are moderately well supplied with vegetable oils. However, one of the most pressing local needs is a high yield protein crop. Dr. John Pitner has kindly provided samples of soybeans for distribution among Tajín farmers, and these are being tried currently. Whether or not they result, the Totonac have two possibilities at hand, among their established crops. Larger scale planting of the pigeon pea (*Cajanus*) might relieve the situation considerably, and greater exploitation of the *chipila* (*Crotolaria*) also should increase, although to a lesser extent, the amount of available protein. Even so, it must be remembered that what the Totonac really need is animal rather than vegetable protein (p. 170).

With respect to minerals and vitamins, more extensive planting and consumption of both *Cajanus* and *Crotalaria* again would be advantageous (pp. 169–170); and another local cultivate, *Leucaena*, produces a fruit, eaten chiefly by children, which should be beneficial if consumed more generally and in greater quantity (pp. 169–170). Although the Totonac are well supplied with fruits and make scant use of what they have at hand, we are attempting to add a new one to the local repertoire. Dr. Eilif Miller has been kind enough to provide a specimen of *Solanum quitoënse* Lam., for trial planting; it is being grown on our little plot of ground in Tajín, and if results are satisfactory, seed will be distributed among the neighbors. However, the plant is not prospering, perhaps because of low elevation and uneven rainfall.

We have no further suggestions to offer concerning plants which might contribute to improved nutrition. Below follow a number of suggestions designed to give Tajín a more diversified economy. On a straight subsistence level, the Totonac do quite well with maize, but their chief cash crop, vanilla, is uncertain at best. Often it cannot withstand the brief drought of spring and virtually the entire crop is lost. In that case, brown sugar produced from cane plantings is the only major source of cash, and it is inadequate.

Other disadvantages are associated with vanilla. The price is set by a small clique of merchants in Papantla, who profit more than does the Totonac producer. And, as noted above, the social ills of theft and homicide are closely linked with vanilla. These are not easy to correct. But if theft could be controlled, the producer might have an opportunity to dry his vanilla and thus be in a position to sell it for a better price. He could, in that case, market with greater facility to consumers in Mexico City and so eliminate, in part, the dependence upon the Papantla middleman.

We certainly do not suggest a complete replacement of vanilla, for it fits too well into the local setting. It is part and parcel of the crop rotation system, and, in good years, it is a sound cash crop. What we should suggest is less dependence upon vanilla and the addition of other cash crops to supplement it in lean years.

The possibility of adding commercial rubber to the local economy has been mentioned previously (p. 84). It, too, might be subject to drought, but it could do no harm to make an experimental planting of improved, disease-resistant stock of commerical rubber. If a few trees could be added to the heterogeneous assemblage in the milpa, a family might have a modest and relatively secure source of cash income quite apart from vanilla. Here, of course, planting presumably would be confined to those who own their own land, for it would be scarcely profitable to plant on rented terrain.

A Totonac farmer suggests that sesame might be converted into a profitable crop. Sesame has been raised, on a small scale, with some success. But the danger is that when sesame functions as a cash crop, there is a temptation to overplant, at the expense of maize. Manifestly, such a move would be poor economy.

Of other possibilities, Dr. Carl Sauer suggests a rotenone-bearing plant,[73] and Dr. George Harrar, African oil palm. Both require tropical conditions, and presumably both could be marketed in the United States—the former, for the preparation of insecticides; the latter, particularly for the manufacture of tin plate and terne plate. Mr. Virgil Pettit thinks that kenaf (*Hibiscus cannabinus* L.) might be preferable. He has supplied a small lot of seed for experimental planting, but offhand it seems likely that kenaf will not be suited to local conditions.[74]

This concludes our suggestions for cash crops. Should any of the above possibilities result satisfactorily in Tajín, the undue emphasis now placed on vanilla might be relieved.

## FOOD [75]

Sahagún (3:130) disposes of Totonac diet with admirable brevity: "Their usual food and principal subsistence was chili, with which, after having been ground, they moistened the hot tortillas." This characterization holds, to the extent that both tortillas and chili are prominent in Totonac cookery; but, as will be seen below, other maize dishes are numerous, as are supplementary foods.

### FOOD PREPARATION

#### MAIZE DISHES

Maize recipes are varied, despite the fact that the chief dependence is upon tortillas and maize gruel. Other dishes are prepared only occasionally, some, in fact, almost exclusively for fiestas.

*Tortillas* (čaw).—The tortilla is a thin, round, flexible maize cake which requires considerable

[73] It is said that the United States Government has made several unsuccessful attempts to foster the production of rotenone-bearing plants in Mexico. We have been able to find no published data concerning such projects, and the office of the agricultural attaché, in the Embassy in Mexico City, is not informed. The literature concerning rotenone is extensive, but deals more with processing than with growing. However, Dr. Dorothy Parker has been kind enough to locate a mimeographed report (Hermann), which describes the culture briefly. Commercially, rotenone is derived from two genera of the bean family, *Derris* and *Lonchocarpus*. Both are grown from cuttings, which means that the Totonac would not have to accustom themselves to a new and unfamiliar planting technique. Before any attempt were made to introduce rotenone-bearing plants on large scale in Tajín, obviously, experimental plantings, would be necessary. It is possible that neither plant would be able to withstand the brief spring drought, the occasional low winter temperature, and the chronic weed competition. Without experiment, it cannot be said whether soil conditions are suitable, or whether local plantings would have a sufficiently high rotenone content to be useful commercially. Moreover, Mr. Virgil Pettit has remarked recently, in conversation, that the rotenone market no longer warrants extensive new plantings.

[74] Kenaf requires "soil . . . deeply and thoroughly worked" (Crane, p. 340), both difficult in view of the shallow topsoil and the current digging stick technique. Although the plant apparently is able to meet heavy weed competition, it should be harvested during the flowering stage. Accordingly, not much latitude is allowed, and this assuredly would be a major obstacle in Tajín, where the agricultural program does not run on a rigid time schedule.

[75] Particularly in the latter part of this chapter, there is frequent reference to our herbarium specimens. A number in parentheses following the name of a plant refers to the herbarium catalog, which appears in Appendix C.

time and effort to prepare. White corn is used almost exclusively, although occasionally one of the red corns, which turns white when steeped with lime, may be mixed with it. Sound ears must be used; that is, ears not eaten by weevils, not *podridas* (literally, "rotted"), and not sprouting. The two former result in poor flavor; the latter ears turn the lime water black and the maize is considered inedible.

The first step is to shell the corn, an operation often performed by the children, or with their assistance.[76] The second is to treat the maize with lime. A large clay pot is half filled with water, and a small quantity is removed from it in a bowl. Into the latter is dropped a handful of lime for every *almud* (12 liters) of corn to be treated. The contents are stirred with the hand and the liquid returned to the large vessel. The sediment which remains in the bowl is thrown away or is added to the water which is kept on hand for laundry.

The large pot containing the lime solution now is placed on the fire. When the liquid reaches the boiling point, the shelled corn is added. Immediately the vessel is removed from the fire and the contents allowed to cool; or the coals are raked out and sherds placed beneath the pot, to cut off the heat. Under no circumstances is the maize actually boiled with the lime. Wood ash sometimes is used instead of lime but is considered less desirable.[77]

In most parts of Mexico, maize steeped with lime is called *nixtamal;* in Tajín, the more general name is *nixcón* (kawit'). The liquid, known as *nejayote,* may be used to prepare a couple more batches of corn, after which it is thrown away. Maize steeped in *nejayote* which has been used more than three times is said to turn yellow and is considered unpalatable.

*Nixtamal* sufficient for 3 to 5 days is prepared, and the corn is left in the solution until needed. It is said not to ferment if the correct proportion of lime has been used. Should the maize sour, it is fed to the poultry. In contrast, the Maya of Quintana Roo deliberately allow the dough to ferment, in the belief that it is more digestible (Villa Rojas, p. 54). The Maya of Yucatán prepare *nixtamal* daily (Benedict and Steggerda, pp. 159–160), as does every self-respecting housewife in the Huasteca (information from Tomás Martínez) and in western Mexico. These differences might be significant if distribution were better known.

The third step is to grind the corn. It is removed from the lime solution, rinsed with clear water, and ground; sometimes water is added from time to time during the grinding. The metal hand mill—like our meat-chopper, but somewhat larger and stronger—is popular among families who can afford such a luxury. Ordinarily it sits on a small board, fastened to the top of a substantial post set in the kitchen floor. As the ground corn emerges from the mill, it is received in a low clay bowl or shallow gourd receptacle. The chopper effects a considerable saving of time and labor because it takes care of the preliminary grinding; but, invariably, the maize is further ground on the metate—the tripod milling stone found commonly throughout Mexico. If the family has no metal mill, the corn is ground entirely by hand on the metate; three grindings generally suffice.

The ground, wet maize forms a sort of paste or dough (*masa,* skitit), a small amount of which is scooped up with the fingers from the far end of the metate and then is patted between the hands[78] to form a thin, round cake, about the diameter of a hotcake, but much thinner. This is placed to bake on a flat clay plate and, after being turned, is considered ready to eat. Tortillas removed from the baking plate are placed in a gourd with small aperture, in order that they remain warm and flexible; a cold tortilla becomes stiff and tough and, if possible, is heated before it is eaten.

Today, the average tortilla is between 12 and 15 cm. in diameter (cf. Sahagún 3 : 130); smaller ones may be made as a special gesture for guests or ailing persons. Extra-thick tortillas are prepared for animals, and sometimes the cook herself eats them. Under no circumstances are they offered to a guest. A child may request one, from preference, but unless he asks specifically, he is served a thin cake.

Tortillas—plain or embellished—are eaten three times a day, and some men consume close to 50 such cakes daily (p. 166). Sometimes, however, fried plantain is eaten in the morning and evening, instead of tortillas; and occasionally, at noon, roast plantain is substituted. Bread also is an acceptable substitute morning and evening, but not at noon. Even if a maize gruel is served at noon, it is accompanied by tortillas. Modesto González says that if he eats a certain kind of maize gruel (*atole de bolitas*), usually prepared for evening consumption, he does not care for tortillas. On the whole, the plantain is the only real substitute for the tortilla, and by most it is considered acceptable only at the morning and evening meals.

[76] One family attributes its poor harvest to the fact that, as the children shelled the corn, they inadvertently spilled it and walked on it. "It is not a good idea to step on maize."

[77] A tortilla prepared with wood ash has 30 percent less calcium and 500 percent more iron (unpublished information from Robert S. Harris).

[78] In Mexico as a whole, including the Huasteca (latter information from Tomás Martínez), the tortilla is formed thus, by patting between the hands. But some peoples, such as the Popoluca of Veracuz, the Maya of Yucatán, and the Maya of Quintana Roo, mold the tortilla on a banana, leaf (Foster, 1940, p. 10; Benedict and Steggerda, p. 160; Villa Rojas, p. 54).

Tortillas form the basis for special dishes, such as *tochones* and *enchiladas*. The first is made of old, dry tortillas, which are cut in small pieces, fried, and sprinkled with salt. Of *enchiladas*, there are two principal kinds and a number of variants. One type of *enchilada* is made by brushing a fresh tortilla with chili sauce and sprinkling it with salt; the cake generally is doubled, so that the sauce is on the inner surfaces. The other *enchilada* (taču?la) is made by dropping a fresh tortilla into boiling chili sauce; it is removed and garnished with a bit of lard.

*Atole* (kéla).—Of maize gruels, there are many different kinds and, probably by extension, several other foodstuffs—sweetpotato, squash, and rice—are also served in the form of atole.

Young green ears, of any kind of corn not quite ripe, often are prepared as atole:

*a. Atole de elote* (gruel of fresh ears; škulím). The grains are cut from the ear and are ground on the metate. They are boiled with brown sugar and the resulting gruel served either hot or cold. One informant claims to soak the grains a day before cooking them so that they may ferment; another says that this gruel is not fermented.

Four different kinds of atole are made exclusively from white corn. Of these, one is reserved for very special occasions, while the others are prepared more frequently.

*b. Atole blanco* (ski?jakela). This is made in small quantity, every 3 or 4 days. Its base is white corn steeped in lime. The maize is ground, water added, and the mixture boiled and strained. It is drunk thus, or brown sugar is added for flavoring.

*c.* Another atole is similar but is made of *nixtamal martajado* (taqs?kela). The steeped white corn is broken roughly on the metate but is not thoroughly ground. The half-broken kernels are put in water to boil, and the gruel is drunk without being strained.

*d. Atole de bolitas* (gruel of little balls; skakákela); called also *atole del norte* (northern atole; no explanation of name obtainable). This likewise is made of white corn. The maize, which has been steeped in lime, is ground finely, as though it were to be used for tortillas. To this, dough, salt, lard, and goosefoot (No. 75) are added. Some, perhaps not all, also add brown sugar. Wild dry chili is ground and incorporated in the dough. The latter is formed into small balls, about the size of marbles. These are boiled, and, as they cook, they are stirred with a stick.

For us, the resulting dish is characterized chiefly by its overpowering chili flavor. The liquid is drunk and the little balls of dough are speared and conveyed to the mouth with a thin stick, either of *capulín* or of orange wood, which has been whittled to a point.

*e. Atole de espuma* (foam gruel) or *champurrado* (sakapu·put). Basically, this is the same as *atole blanco*, with the addition of brown sugar. Just before the gruel is served, foam from rapidly beaten chocolate is dropped on the top. This dish is prepared chiefly for the feast which takes place 80 days following the death of an individual.

We come now to a fermented atole which ordinarily is made from purple corn (*maíz morado*), although white may be substituted in case of necessity. Purple corn is grown exclusively for this dish, but is not treated with lime.

*f. Atole agrio* (sour gruel; skut?kela, škuta?kela; skuta, *agrio*; kela, *atole*). The dry uncooked kernels are broken lightly on the metate and are placed in warm water. The vessel is covered tightly and is left for at least 12 hours—longer, if necessary—until the contents ferment. When bubbles appear on the surface of the liquid, the maize is beginning to sour.

Then the broken corn, which has settled in the bottom of the vessel, is removed and is ground—either on the metate or in the metal mill. The liquid is heated and the ground paste added to it. The whole then is strained, to remove the hulls, which are discarded. The strained gruel is returned to the fire and cooked for about 2 hours. During most of the time, it is stirred with a stick, sometimes ornamentally carved (fig. 36). The cooked gruel is eaten unsweetened, or with the addition of brown sugar.

*Atole agrio* characteristically is a sort of mulberry color, owing to the purple maize. It is considered "very refreshing" and is especially popular during warm weather. It is made in considerable quantity—using a *quartillo* (3 liters) or half an *almud* (6 liters) of maize. Invariably, this is the atole which is served to men who come to the house to assist in clearing fields, in planting, or in any other major chore.

Moreover, it is said that years ago, *atole agrio* was served at weddings instead of the chocolate and bread which are favored today. The gruel was dished out in small "cups" made of halves of the fruit of the calabash-tree. On the surface of each serving of atole, a flower or bird design was formed with powder prepared from squash seed (*pipián*), which had been toasted and ground. In this case, the gruel was known as taka¢oqni?i (taka, *encima*; ¢oqni?i, *pintado*).

In different parts of Mexico, there are quite different ways of preparing atole, and while virtually nothing is known of the distribution of these recipes,[79] three of the principal ones are

[79] It is highly desirable that a study be made of maize cookery in general, for there is every indication that recipes will fall into well-defined zones. It is not unlikely that such zones will coincide with old ethnic areas, or with the distribution of certain kinds of maize.

For example, in the Autlán-Tuxcacuesco district of Jalisco, atole invariably is made of *nixtamal*, that is, of maize steeped with lime. But in Tultitlán, in the State of Mexico, *nixtamal* is not used for atole. There, the maize is boiled without lime, or

found in Tajín. For example, (1) the white-corn recipes given above all are based on *nixtamal.* However, (2) the *atole agrio* is made of boiled corn which has not been treated with lime. In addition, (3) an atole made of toasted, ground corn is used in Tajín exclusively as a remedy for diarrhea:

*g. Atole de maíz tostado* (štačuču? kúši). "This atole is taken as a medicine, not for pleasure." The kernels are toasted on the baking plate, then are ground to powder. Water is heated, with brown sugar, and the ground maize meal added to it. The whole is allowed to boil, then is drunk.

Similarly, to treat diarrhea, rice is toasted, ground, and the meal made into a gruel.

This concludes the Totonac series of maize atoles, but for the sake of convenience, sweetpotato, squash, and rice gruels may be mentioned here.

*h. Atole de cuchara* (spoon gruel); *atole de camote* (sweetpotato gruel; mantáqkela). Like the atole made from purple corn, this is fermented.

According to one informant, it is made in the same way as the *atole de nixtamal martajado* (see *c*, above), but sweetpotato is added to the broken corn, and the whole is allowed to stand about 3 days, until it sours. This atole is not strained; it is known as "spoon gruel" because it must be stirred constantly as it cooks.

Another informant gives a different version of the same receipe. The broken *nixtamal* is boiled, being stirred constantly. Separately, sweetpotato is crushed on the milling stone. Water is added to the raw sweetpotato mash and the mixture allowed to stand. When the liquid is clear, it is poured off and placed in another vessel—not that of the *nixtamal.* The remaining sweetpotato mash then is added to the cooking maize. After a short while, the water drained from the raw sweetpotato is added and the whole allowed to ferment. The following day, brown sugar is added.

*i. Atole de calabaza* (squash gruel; šakela nipši). Raw, ripe squash is cut in hunks and boiled. When cooked, it is taken from the vessel and the rind removed. The flesh of the squash then is ground and returned to the hot liquid together with brown sugar and stick cinnamon. It is said that some cooks add *nixtamal,* which has been well washed but not ground; others serve squash gruel without the addition of maize.

*j. Atole de arroz* (rice gruel; šakela *arroz*). Rice is boiled alone, or with either white or brown sugar; some add stick cinnamon. Once cooked, the rice may be ground, but many serve the gruel with the kernels entire. This is drunk at meals instead of coffee.

*Tamales.*—In Tajín, tamales are not known as such unless their filling happens to be of meat. Nevertheless, there are numerous maize dishes which basically are tamales, although diverse names cloud the affinity. So also does the fact that tamales with meat filling are wrapped in banana leaves, while other kinds of tamales have a corn-husk covering. In the latter case, the dough and filling are placed in the slight hollow at the butt of the husk; the top of the latter is doubled over and securely tied in place with a narrow strip of husk.

Both tamales proper and the related forms are steamed. A cribbing of twigs is placed on the floor of the clay cooking pot, and on this bed the tamales are arranged so that they do not come in direct contact with the water. As the tamales are put into the vessel, the mouth of the pot is lined with leaves left over from the wrapping—either banana leaves or corn husks. These are arranged vertically around the inner rim and extend well beyond it. When the vessel is full, the leaves are folded over, to serve as a cover.

*a. Piques* (Totonac name not recorded). This is the simplest form of *tamal.* The *nixtamal* is ground and salt and lard added. Without additional flavoring and without any filling, the paste is wrapped in dry corn husks and steamed.

*b. Bollitos de elote* (tánkolo). Several ears of fresh corn are collected and the husks cut from them with great care, since they are to be used as wrapping. With a knife, the kernels are removed from the ear. They are ground on the metate, then reground, with the addition of brown sugar. Unmelted lard and ground cinnamon stick are added and the whole is well mixed. Small amounts are wrapped individually in corn husks and steamed.

*c. Bollitos de anís* (fennel roll; saksí wati). The *nixtamal* is well ground, then reground with fennel (No. 88). The mixture is moistened with sugarcane juice and brown sugar and lard added. The whole is well mixed and small amounts are wrapped in dry corn husks and steamed.

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it is toasted, ground, and mixed with water. In neither of these areas is soured atole known.

However, in the little village of San Francisco, near Tamán, San Luis Potosí, atole is made either of *nixtamal* or of dry, ground maize, to which water is added; in both cases, the mixture is allowed to ferment. In Huastecan villages near Tancanhuitz, the favorite atole is made from white corn, ground dry, then placed in water to ferment for 24 hours. Atole also is made of white maize dough, sweetened with brown sugar; this form is not fermented. Soured atole is reported from Tepehuacán, near Molango, Hidalgo. In short, fermented atole may be quite general in eastern Mexico, but without systematic inquiry, we can do no more than guess.

The Maya share the three basic Totonac recipes for gruel, making it of *nixtamal;* of maize "briefly cooked in water without lime"; or of the toasted, ground kernels. It is interesting to note that one kind of atole is prepared "from maize which has been soaked in water for three or four days." This assuredly suggests soured atole, and it may be noted, furthermore, that the Maya of Quintana Roo make their tortillas of soured dough (Villa Rojas, p. 54).

This is a festival dish, served particularly at the feast which takes place 80 days following the death of an individual.

*d. Púlacles* (Totonac name said to be the same). These are tamales with a filling of bean paste, ordinarily made of the *frijol de Castilla.* The beans are boiled until nearly dry. In the meanwhile, chili of any kind is ground, together with wild tomato. Oil is extracted from sesame, squash seed, or the physic nut (*Jatropha*, No. 192) and is added to the beans, together with the chili and tomato. Coriander and the shredded leaves of *acoyo blanco* or *acoyo colorado* (*Piper*, Nos. 72, 184) are dropped in for good measure. Some use the young stems of *acoyo*, but this is said to give a "very strong flavor."

Dough made of ground *nixtamal* is flattened on the palm of the hand; a bit of the bean mixture is slapped on it and the dough folded over. A wrapping of corn husk or of *papatla* (No. 128) leaf is applied, and the *púlacles* then are steamed. In most households they are the standard dish for Fridays during Lent.

*e. Capitas* (puláskstapu) also are made with a bean filling. Brown sugar is added to the ground *nixtamal*, and with the palm of the hand the dough is pressed so as to form an even layer on a cloth which is placed over the grinding surface of the metate. On top of the dough is spread a layer of cooked beans (not ground) and brown sugar. The cloth then is lifted at the far end of the metate and is doubled toward the worker, so that about 15 cm. of the dough and filling are folded over the lower layer. The cloth is pounded lightly, then peeled from the top. Again, it is doubled toward the worker, so that another 15 cm. of overlap follows. The end result is alternating layers of dough and beans, enclosed within maize dough. With a sharp bamboo, pieces are cut from the "loaf" and are wrapped in dry corn husks, to be steamed.

*f. Tamales* (wat?). Basically, these are similar to the preceding dishes, but differ in that they have meat filling and are wrapped in banana leaves instead of corn husks.

A number of banana leaves are hacked from the tree and are placed one on top of another. The stack is set on the table and, with a sharp knife, the leaves are cut in squares whose size is determined more or less by the width of the leaf. The leaf squares then are dropped into boiling water or are braised on the baking plate, so that they will be soft and pliable. Such treatment also is necessary "so that the juice of the banana will not be released."

In the meanwhile, the *nixtamal* is ground, then reground with a bit of salt. The filling is prepared by grinding the cultivated chili with the wild tomato to form a sauce. No garlic, onion, goosefoot, or coriander goes into tamales. The raw meat—either pork or fowl—is cut in small pieces and mixed with the sauce.

A bit of the maize dough is placed on one of the leaf squares and, on top, a dab of meat and sauce. The leaf is folded so that two edges join one another and these again are doubled. The ends then are folded toward the center and the contents thus thoroughly encased. The tamales are packed in a pottery vessel, on a cribbing of twigs, and steamed.

Sometimes the tamales "refuse to cook," or some cook well and others not. This difficulty is attributed to the "touch of a dead man" (*los tentó el muerto*). To avoid this disaster, a few leaves of *aguacate oloroso* (No. 248) are tossed into the fire.

By and large, tamales are prepared for very special occasions: for a celebration which takes place after the birth of a child; for All Souls' Day; and for the festival 80 days following the death of a person. For these occasions, tamales are socially correct; but they definitely are not acceptable for weddings. For festivals generally, meat with *mole* sauce is preferred to tamales, because a serving of *mole* involves less meat than does one of tamales; "*mole* is more economical."

*Other maize dishes.*—Except for tamales and related forms, maize is not combined with meat or beans. There is, for example, no equivalent of the *pozole* of western Mexico, which is essentially a hominy cooked with pork or fowl. The remaining Totonac maize dishes are chiefly cakes or breads, although for convenience, we have included at the end of this section *pinole*, a confection made of toasted and ground corn kernels, and two recipes based on maize fungus.

*a. Gorditas* (little fat ones; stululú čaw). The meal is prepared as for tortillas, but the cake is not formed by patting. It is, however, shaped in the hands. The resulting cake has the same diameter as a tortilla, but is about 2 cm. thick. It is cooked on the baking plate, and upon being removed from the fire, the upper surface is mashed with a spoon and lard and chili added. The latter may be wild chili ground to a powder, or it may be a sauce prepared by crushing wild chili with tomato. A variant, combined with dry pea paste, is described later.

*b. Bocoles* (čaw; same name as tortilla). These are essentially the same as tortillas, but salt and lard are mixed with the dough. Again, the cake is formed in the hands, but is not patted. It is small (5 cm. diameter) and somewhat thicker than a tortilla. As usual, it is cooked on the flat baking plate.

A sweet version is prepared by adding brown sugar, lard, and fennel to the dough, which then is formed into cakes as just described.

*c. Tortilla de elote* (fresh corn tortilla; iškake?). This dish is related more in name than in fact to the regular tortilla. It is made of fresh, thoroughly ripe corn, not quite dry. The grains are cut from the cob with a knife, an effort being made to remove them entire. The kernels are ground and mixed with brown sugar and lard. A small amount of the paste is placed between banana leaves and the upper leaf patted to spread the dough in the form of a round cake. The latter is placed on the baking plate without removing the leaves. When the cake is turned, the leaf is peeled from the cooked side. These fresh corn cakes are eaten hot.

*d. Titines* (Totonac name not recorded) are made of *nixtamal* ground without the addition of water. The

dough is placed in the sun to dry for a day or two, following which it again is ground on the metate, with the addition of brown sugar and fennel. The dough is packed tightly in a commercial mold or in an improvised one made of yucca leaf. The leaf is torn lengthwise in strips, each about 1 cm. wide and 20 cm. long. The ends of each strip are tied and are secured with a small wire, to form a circle into which the dough is packed. The cakes are cooked in an oven, if one is available; if not, on the flat baking plate, being turned so that they may cook on both sides.

*e. Cernosas* (tašpuyújun). *Nixtamal* is ground; salt and lard are added, working lightly with the hands, so that the dough may be well mixed, but without exerting pressure. A handful of the resulting mixture is removed and is sprinkled lightly on the hot baking plate, in the form of a disk. The result is a light, somewhat spongy, unsweetened cake.

*f. Totopos* (tamáktin, untoasted; ska·wawa, toasted). These are sweet cakes. The *nixtamal* is well washed and is ground until it forms a fine paste. The ground seed of fennel and brown sugar are mixed with lard and added to the dough; some include an egg or two. When the dough is well mixed, it is formed into a thin sheet, using the hand stone of the metate. With a bamboo splint, which has a sharp edge, the dough is cut into rectangles, which are cooked on the flat baking plate.

*g. Pemoles* (Totonac name not recorded). The *nixtamal* is ground and is placed in the sun to dry, "until it is like flour." It then is sifted over a table. A bit of fennel and brown sugar are ground together on the metate and, together with sesame oil or cold lard, are mixed with the meal. Two eggs are kneaded in. When the dough is ready, it is spread on the table in sheet-form and is cut in small squares with a knife. The resulting cakes are quite thick. They are arranged on a tin tray and are baked in the oven.

*h. Pinole* (škapat') is made from any kind of corn. The kernels are toasted and ground, and grated brown sugar is added. The powder is eaten as a confection; for small children, it is moistened with water, "so that they will not choke."

*i. Maize fungus.* The black fungus which sometimes appears on the ears of corn is attributed to the fact that some inconsiderate person has defecated in the milpa. However, the fungus is not spurned as food.

It is collected from several ears and brought to the house. The black substance is ground with salt and goosefoot and is combined with maize dough to form a cake which an informant considers a variant of the *gordita* described above. Sometimes the fungus is cooked with goosefoot, wild tomato, and lard, to form a sort of broth.

### OTHER STARCHY FOODS

By any standards, the Totonac are well supplied with starches. Apart from maize, starchy foods include plantains and bananas, cucurbits, and assorted roots and tubers.

*Plantains and bananas.*—Most families have at least a few plantain and banana trees, and some have a considerable excess of fruit. Accordingly, even if by chance a given family should have an insufficient supply, fruit is available locally at small cost. To avoid depredations of the opossum, it is cut green and the racemes hung from the rafters of the kitchen to ripen.

As a rule, bananas are eaten raw, plantains, cooked. Both kinds of plantain (*plátano de Castilla* and *plátano macho*) are roasted in the ashes near the hot coals, being turned frequently until they are cooked. If the fruit is ripe, the skin is left on; if green, the skin is removed prior to roasting. Salt and lard may be added to make the dish more tasty. Plantains often are fried or boiled; in the latter case, twigs are placed on the floor of the pot, so that the fruit will not stick.

Sometimes green plantain (*plátano de Castilla*) is peeled and boiled, after which it is mashed and fried. In this form, it is eaten with beans, as a substitute for tortilla. Or, three or four plantains or bananas of any kind may be ground and the paste mixed with maize dough; the mixture is patted into cakes (čačau seakna), which are baked on the clay griddle.

It is said that years ago there was a great cold spell and the maize crop failed. As an emergency measure, the root of the banana (plantain?) was ground and mixed with maize dough to make tortillas.

*Cucurbits.*—Although the two principal squashes raised by the Totonac are of closely related species, they are utilized in quite distinct ways. One (*calabaza*) produces edible flesh; the other (*pipián*) edible seeds; neither blossom is eaten.

Young *calabaza* is served as a soup; it is cut in small pieces and is boiled with salt, tomato, *cebollina*, goosefoot, and green, wild chili, which has been ground.

Once the *calabaza* is mature, it is cooked with brown sugar, to form a preserve. The latter is eaten following the noon meal; or it is nibbled on in mid-morning, as a between-meal snack. It is not served at breakfast or supper, as is almost invariably the case in west Mexico. A special form of *calabaza* is said to have a thin rind and to be so sweet that it does not require the addition of brown sugar. This is steamed and eaten as is the more common type.

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Atole of *calabaza* has been described previously; the same kind of squash also is made into a *tamal*:

*Tamales de calabaza.* Young squash is cut in small pieces and vegetable oil—of squash (*pipián*) seed, of sesame, or of physic nut (No. 192)—is added, together with salt, lard, and green, wild chili. In another container, maize dough is thinned with water. A dab is dropped on a square of banana leaf, and on top is placed some of the squash mixture. The leaf is folded to enclose the filling and the tamales are steamed, as described previously.

The flesh of the other squash, the *pipián*, is regarded as inedible. When the fruit is young and tender, it is opened and the "entrails" (*tripas*) which surround the seeds are ground and boiled with maize dough to form a stew (*huatape*). However, it is the seeds of the *pipián* which are most used. They are dried, toasted, and ground, to provide the Totonac with one of their chief vegetable oils.

Other cucurbits are grown locally but are of negligible importance. The *chayote* is boiled without salt and is allowed to cool. Eaten cold, it is considered very thirst-quenching.

The *calabaza de melón* (p. 137), apparently of recent introduction and not grown generally, is prepared in Tajín as it is in the mestizo town of Gutiérrez Zamora. The melon is peeled and cut in pieces. These are soaked in water to which a bit of lime has been added, then are boiled with brown sugar.

Two cucurbits are eaten raw: a sweet melon, (*Cucumis*, No. 361) and several kinds of watermellon. Occasionally, an individual may be inspired to suck the flesh from the seeds of the ripe fruit of *amor* (*Momordica*, No. 197). Children are prohibited from indulging in this pleasure, since it is believed to provoke nosebleed.

*Starchy roots and tubers.*—Manioc is eaten principally in November and December. Some consider the white more tasty than the yellow. The roots are boiled, without salt; or they are boiled with either white or brown sugar. Sometimes they are tossed into the copper vat in which cane juice is being converted into brown sugar. Otherwise, when manioc is boiled, a layer of shredded corn husk is placed on the bottom of the pot and another on top of the roots; this is "to preserve the steam." One woman recommends the use of pulús leaves (No. 3), green or dry, instead of corn husk.

Sweetpotatoes also are available during the winter, from December through February. The three kinds are prepared alike, being roasted, boiled without salt, or boiled with brown sugar. Ordinarily, a bed of pulúš leaves is placed on the bottom of the vessel, the sweetpotato added, and another layer of pulúš arranged on top. With this treatment, the boiled "sweetpotatoes burst"; if corn husk is substituted for pulúš, they turn out dry and less palatable. In addition, sweetpotato often is served in the form of atole, the recipe for which has been given above.

The yam is available the year round. Its aerial tubers are roasted or are boiled with or without salt, then are peeled, and eaten. Although we were given a graphic description of the extraction of the tuberous root with the aid of the digging stick, it appears that the root is not eaten. The Maya also have the yam, but utilize it differently (Benedict and Steggerda, pp. 161–162).

Various dishes center about the arum (pisís, No. 4), which is a Lenten specialty; at that time, the corms are at their best and later in the year they are woody. On Fridays during Lent, an atolelike dish is made by boiling, peeling, and grinding the corms. The mash is added to a pot of boiling water, with salt. When the cooked brew is removed from the fire, a spray of goosefoot is added, and the liquid is drunk as if it were atole. For Good Friday, the corms are boiled, peeled, and fried in lard. The leaves are not considered edible.

A stew (*huatape*) also is made of arum, which is boiled, peeled, and ground. Meanwhile, garlic and onions are boiled together. To the latter, the arum mash is added, together with salt, coriander, and a spray of goosefoot. Arum sometimes is roasted, but "it must be well cooked, or it will sting the tongue." Should this take place, a pinch of salt relieves the discomfort.

Bermuda arrowroot (No. 227) is available during the spring months; generally it is eaten with beans. The underground stem is broken at the joints into short lengths which are peeled and boiled. They are removed from the liquid and ground on the metate; the paste then is returned to the broth and the concoction allowed to stand until the fiber collects on the floor of the vessel. The thick liquid may be added to beans, or it may be drunk alone, as if it were atole. Boiled arrowroot sometimes is added, unground, to beans.

The raw, tuberous root of the *jícama* (presumably *Pachyrhizus;* no specimen) is another starchy product. It is little grown in Tajín and is eaten only occasionally, as if it were a confection. It is, however, prominent in the offering prepared for the dead on All Souls' Day.

Additional starches are acquired exclusively by purchase, either in the local stores or in Papantla. They include rice, macaroni, a variety of other *pastas*, marketed in various forms for use in soups, as well as commercial crackers and bread.[80] From time to time, someone in Tajín makes bread in quantity, for sale to the neighbors. And a Totonac who goes to Papantla often brings back rolls or sweet bread for the family.

### PROTEIN FOODS

The ancient Totonac priests of "Cempoala" are said to have eaten, in the middle of the morning, "sometimes meat, other [times] beans . . . prepared in many ways" (Las Casas, p. 461). In Tajín today, eggs and legumes supply the chief protein elements of the diet, followed in importance by meat, game, and fish.

*Eggs.*—Eggs are added early to the diet, and one 14-month old child, still nursing, is said to be quite capable of consuming an egg and five tortillas daily. Since most families keep fowl, the supply of eggs usually is generous. They are a common dish in most households and are prepared in various ways, none very complicated.

Boiled eggs are a common breakfast dish, eaten with tortilla and chili sauce. Sometimes eggs are "broiled" (*asados*). A bit of salt is dropped on the baking plate, and on top of it an egg is broken. Ash is blown from burning embers, which then are placed on top of the griddle, close to the egg. The latter is served with chili sauce.

Probably most often eggs are fried in lard. A frugal housewife gives the following recipe for five persons: Three eggs are fried; over them is poured a sauce made by grinding together 8 peeled chilis (of the kind known as *pico de pájaro*), about 10 wild tomatoes, and salt; to the resulting paste, water is added.

For an ailing person, an egg is prepared in a special way. A small amount of maize dough is ground to a fine paste and is diluted with water. An egg is broken into the dough, and salt and finely chopped onion added. The result is of the consistency of "thick atole." It is poured on the hot clay griddle where it solidifies, later being turned, so that it may cook on both sides.

It has been noted above that eggs sometimes are added to certain kinds of maize cakes.

*Beans and peas.*—Two kinds of tamales (*púlacles* and *capitas*) with bean filling have been described above, in connection with maize cookery. It also has been mentioned that cooked arrowroot, either ground or entire, often is combined with beans.

Beans "of any kind," including cowpeas and the pigeon pea, are eaten green or dry. In both cases, the beans are shelled and boiled. Coriander, goosefoot, and one of the following vegetable oils are added:

*a.* Dry squash (*pipián*) seeds are toasted and ground on the metate; a small amount of water is added. The paste is squeezed in the hand to extract the oil. The now dry pulp, known as *orejitas de pipián* (little ears of *pipián*) is added to the beans. Later, when the latter are served, the oil is poured over the top.

*b.* Toasted sesame seed is ground and added to the beans as they cook.

*c.* The dry physic nut (*Jatropha*, No. 192) is shelled, toasted, and ground; and the resulting paste is cooked with the beans. Sometimes it is combined with sesame, but never with squash seed; nor is the latter mixed with sesame.

*d.* Seed of the local perennial cotton is toasted and crushed lightly on the metate, to be added to the beans. Relatively few families use this oil; it may have been more popular before the introduction of sesame.

Shelled green beans sometimes are prepared as a stew (*huatape*). They are boiled with salt, and maize dough, thinned with water, is added as thickening. Different cooks favor different seasoning. One adds a small leaf of *aguacate oloroso*, (No. 248) together with ground wild chili, either green or dry. Another uses either *quitacalzón* (*Phytolacca*, No. 29) or the aromatic avocado. Some prefer the shredded leaves of *acoyo blanco* or *acoyo colorado* (*Piper*, Nos. 72, 184).

Dry beans of any kind often are fried. First, they are shelled and boiled. Onion is browned in lard; the beans are drained and are added to the hot fat and onion. With a wooden spoon, they are mashed thoroughly. Later, the bean broth is added and the mixture allowed to simmer until it thickens.

[80] A local shopkeeper says that the items most in demand in Tajín are lard, rice, crackers, salt and kerosene.

Sometimes cracklings are added to the boiling beans, together with goosefoot, *cilantro extranjero* (*Eryngium*, No. 276), *cebollina*, and green, wild chili. This plate is known as mantikastápu, apparently the Totonac term for bean (stapu), prefixed by the Spanish (*manteca*) for lard.

The green pea is little eaten. Young peas are boiled in the pod, then shelled and served as a vegetable. Dry peas are boiled and ground on the metate. When the paste cools, a dab is combined with maize dough to form a thick, round cake (*gordita*), which is cooked on the baking plate. The top of the hot cake is broken with a spoon and a sauce of fried onion, tomato, and wild chili is poured over it. If it so happens that cheese is available, it is sprinkled on the top. Sometimes small cakes are made by combining maize dough with green peas and flakes of dry fish.

*Fowl.*—The usual techniques for killing fowl have been described previously (pp. 91–92). A turkey is plucked immediately, but a chicken is doused first in hot water, so that the feathers may be removed more easily. The plucked bird—turkey or chicken—is singed in a rapid blaze made with paper or corn husks; then, as a bleach, it is rubbed thoroughly with maize dough and rinsed in clear water. Some prefer to wash the bird with soap and water.

Different housewives have different ways of cleaning and sectioning fowl. In any case, all remove the viscera and the oil deposit at the tail. These are discarded, "but it is not good that the dogs drag them about." They are collected and burned, or they are taken to the forest and placed high in a tree.

As a preliminary to further preparation, fowl often is braised on the coals or is "smoked." In the latter case, the meat is impaled on sticks which are stuck in the earth or mud surface of the hearth, close to the kitchen fire. Thus treated, meat will last 3 or 4 days; otherwise, it may become infested with maggots. If stew is to be made, the bird is smoked, even though it is to be eaten at once. However, if tamales, soup, or *mole* are to be prepared without delay, smoking is unnecessary. Following the searing or smoking, the carcass is cut in smaller sections; when the dish is to be served to field workers, "the pieces are *very* small."

In addition to tamales, there are three principal ways of serving fowl—in soup, in stew, or in *mole* sauce. Strangely enough, these three dishes seem not to have Totonac names. *Huatape* (stew) sounds Totonac to us, but informants consider it a Spanish term.

Soup (*caldo*, literally, broth) generally is made of chicken; "turkey does not have a good flavor in soup." The sectioned bird is boiled in water to which a bit of salt has been added. When it is cooked, onion, garlic, and wild tomato are fried and added to the liquid, along with a spray of mint (*hierbabuena*) and coriander. Some add cumin seed, but not all care for the flavor. If the chicken is tough and "does not want to cook," a few grains of *nixtamal* (maize steeped with lime, but not yet ground) are tossed into the boiling brew.

Stew (*huatape*) is similar, but maize dough diluted with water is added as thickening, being stirred so that it will not form balls in the boiling broth. Some add a spray of mint (*hierbabuena*) and either tomato, or ground, dry, wild chili, to give color. Others boil the meat with salt and add chili and a leaf of *pimienta* (No. 30).

For *mole*, the fowl is sectioned and boiled, and the sauce prepared as follows:

*Chile de color* (purchased in Papantla; not grown locally) is toasted on the baking plate. The seeds are removed, fried in lard, and ground. The chili is placed in water to soften, then is ground.

Dried, cultivated chili (*chilpoctli*) is boiled and the veins removed; it is rinsed three times in water, then is ground, later to be fried in lard.

Meanwhile, stick cinnamon, cloves, and peppercorns (all purchased in Papantla) are ground, sometimes together with a cake of chocolate. A ripe plantain (*plátano de Castilla*) and white bread (usually bought in Papantla) are sliced and fried.

The *chile chilpoctli* next is fried, and to it are added the ground ingredients, including the flesh and seed of the other chili. If chocolate has not been crushed with the dry spices, a cake is broken in small pieces, which are dissolved in a bit of hot broth, and the liquid added to the main mixture. The result is *mole* sauce.

Some of the broth is removed from the vessel in which the fowl is boiling and the sauce added to it. If the resulting liquid is too thin, it is allowed to simmer until it thickens.

A number of wild birds are eaten—the pheasant, dove, quail, and several others, including a small parrot (*perico*) (No. 27, table 21, Appendix D). One family has in its kitchen three cages of wild doves which are being kept for the table. Although the birds are sufficiently tame to run about

the house, their wings are clipped. Wild birds generally are eaten in soup or stew. Modesto González maintains that they may be served in *mole* sauce, but others disagree; practice may vary from one family to another.

*Beef and pork.*—Beef is purchased occasionally in Papantla. Generally it is served in soup (*caldo*), seasoned with garlic, onion, tomato, coriander, and mint. Once in a while, the head of the family buys a bit of jerked beef, which either is broiled or fried. Rarely is beef served in *mole* sauce.

Pork is infinitely more popular and is prepared usually as tamales or with *mole* sauce. Descriptions of these dishes have been given above (pp. 154, 158).[81]

Some make blood sausage (*rellena*) of the large intestine of the hog. It is washed well with lime and the juice of the *limón*, care being taken not to rupture the tissue. Blood, seasoned with *cebollina* (little onion), mint, and chili, is poured into the intestine and the latter securely tied. The gut then is boiled until the blood solidifies, a matter determined by pricking with a sharp stick. The small intestines are not eaten by humans but are fed the dogs.

Cracklings (*chicharrones*, ɸikinmakaš), are a general favorite. As a modest luxury, they may be purchased in Papantla, or they are prepared in Tajín when a hog has been slaughtered. Occasionally, cracklings are made in small quantity, from beef or from the *papada* of the turkey.

The fat is peeled from the slaughtered hog, together with the skin. The two are separated and the fat cut in squares, the skin in strips. All are placed in a large copper vat with water and are cooked over a hot bonfire, being stirred constantly with a stick. During our stay, one lot did not turn out successfully—little lard, and the cracklings half-burned. It was concluded that "either a pregnant woman or someone who once had been bitten by a snake" must have approached the kettle.

*Game.*—Game is of scant importance in the diet, and represents little more than an occasional windfall. Game birds have been included above, with domestic fowl. Most other game is smoked and served in a stew. This applies specifically to venison, squirrel, rabbit, and armadillo. Sometimes rabbit is not smoked, but is boiled with garlic, chili, and tomato. Armadillo is said to be very acceptable served with *mole* sauce. The flesh of a feline (*onza*, *oncilla;* tánkiwi) is similarly prepared but is far from popular. Few care for the meat of the peccary. Some eat raccoon and opossum, but we neglected to ask in what form. The prairie dog is declared inedible by some; others claim that it is broiled and eaten. Skunk meat is considered exclusively medicinal.

*Fish.*—Small fish from the arroyos are smoked before they are made into a soup, with goosefoot, *cebollina*, coriander, and salt. Sometimes freshwater mussels are tossed into the broth.

From time to time, the Totonac buy a dried fish in Papantla, known as *sábalo* (tíšku'wikamakni), which usually is served with *mole* sauce. Another dried fish, purchased occasionally, is called *lisa.* It is washed and soaked in water, then broiled or fried. Sometimes it is served with *mole;* sometimes it is dipped in egg and fried, then placed in hot water, together with *cebollina*, coriander, and chili. The latter is either the local wild form, green or dry, or the chili known as *pico de pájaro.*

The roe of the same fish is sold in Papantla in November and December. It is washed, toasted, and ground on the metate. A raw egg is added and the paste fried as a cake. It may be eaten thus, or the cake converted into a soup or served with *mole.*

Fresh water shrimp (*camarón*) is made into stew. Corn dough, well ground and thinned with water, is dropped into boiling water and stirred. The shell and head are removed from the shrimps, which then are washed and added to the gruel, together with chili. The latter is the dry, wild form, ground and water added; it is allowed to stand until the seeds drop to the bottom. Then the liquid, containing the ground chili is poured into the stew; the seeds are not included. Some flavor shrimp stew with goosefoot.

Another kind of shrimp (*acamaya*), regarded as particularly tasty, is washed, sprinkled with salt, and placed on the clay griddle to toast.

[81] Mention should be made of *zacahuile,* a special dish prepared in Papantla for All Souls' Day, as part of the food offering dedicated to the spirits of demised adults. Roberto Williams knows this dish from Tuxpan, Chicontepec, and from various parts of the Huasteca. In Tajín, it is made only by the wife of Lorenzo Xochigua, who happens to be from Papantla.

The local, cultivated chili is boiled and ground. Maize dough is mixed with it to form a paste about the consistency of gruel. Pork or chicken is added and the mixture placed in a clay vessel lined with banana leaves. Leaves also are used as a covering. The concoction is cooked for several hours in a hot oven.

CONDIMENTS AND SWEETS

The Totonac cooking is highly seasoned. Chili is used in many dishes and in quantity. Occasionally, through miscalculation, the dose of chili is too strong even for local taste. In that case, an emergency atole is prepared by crumbling a freshly made tortilla in a bit of water and the liquid is drunk to relieve the discomfort.

Chief dependence is upon the small, wild chili, which is available, green or dry, throughout the year,[82] and without which many meals are not complete. Unfortunately, we have few concrete data concerning chili consumption. However, Bernabé Xochigua collected about half a *fanega* (that is, 72 liters) of wild chili, of which he retained a quarter part for the use of his family of two adults and two half-grown children. Consequently, we may say that this household places its chili requirements at about 18 liters a year. The family of Tirso González, which comprises two adults and five girls, ranging from infancy to adolescence, consumes 1 *almud*, or about 12 liters of wild chili annually.

Here follow sauce recipes based on the small, wild chili:

Green chili. A few wild tomatoes are set to boil, and to to them is added green chili, with the stems removed. The tomato and chili are removed from the water and are ground; to the paste is added the liquid in which they were boiled. This sauce is eaten chiefly with tortillas.

Dry chili. Several wild tomatoes are boiled. The dry chili is toasted on the flat baking plate and then is ground in a dry bowl. With a spoon, the tomato is fished out of the hot water and is ground with the chili. The water is added to the paste, to form a sauce which likewise is served commonly with tortillas.

Next in importance is the cultivated chili, which is milder in flavor than is the wild form. It is used principally in *mole* sauce, but also is made into a sauce to be eaten with tortillas:

Green chili. The chili is roasted on the coals, is skinned, and is ground without removing the veins or the seeds. A clove of garlic and a bit of salt are added. No water is necessary, because the green chili contains a certain amount of "juice." This sauce is eaten on tortillas, but not with egg; "it looks very poorly when served with egg."

Dry chili. The seed is removed from the chili and the latter toasted on the baking plate. It is dropped into boiling water and allowed to stand a short while until it softens. It then is ground with a clove of garlic. The resulting paste may be fried, or the water in which the chili steeped is added. This sauce is eaten on tortilla or on eggs.

In addition to the local, cultivated chili, *mole* sauce requires *chile de color*, a variety which is not grown locally and which is available only through purchase in Papantla. Still another chili, known as *pico de pájaro*, is used occasionally. It does not grow well in Tajín, where there are only a few plants; it too is purchased, as needed.

Coriander also is prominent in Tajín cookery and is included generously in several dishes, especially soups and stews. In season, it is used green, but, at other times, the dry leaf and seed are acceptable. A substitute, known as *cilantro extranjero* (*Eryngium*, No. 276), is available throughout the year. Goosefoot (*epazote*, *Chenopodium*, No. 75) imparts a pungent flavor to a good many dishes, and shredded leaves (sometimes, the young stem) of *acoyo blanco* or *acoyo colorado* (*Piper*, Nos. 72, 184) often are added to beans. Mint (*hierbabuena*) is surprisingly popular with meat dishes; less frequently, the leaf of the aromatic avocado (No. 248) or of the *pimienta* (*Pimenta*, No. 30) is used as seasoning.

Condiments are by no means restricted to native plants, as witnessed by the coriander. Onions and garlic also are important in Tajín cookery, but are used with more restraint than is either chili or coriander. Fennel (*anís*, *Foeniculum*, No. 88) is another introduced plant which finds high favor. In addition, commercial Old World spices, such as cinnamon, cloves, and peppercorns, are purchased for special dishes.

Although the Totonac are the great producers of vanilla, they make virtually no use of it; occasionally, a few macerated pods are added to commercial alcohol, to form an intoxicating drink.

Salt is used extensively; it is purchased in Papantla or in the little stores in Tajín.

Sweets are plentiful today, thanks to the introduction of sugarcane. Both children and adults chew the fresh cane with relish, and a brown sugar produced locally from cane juice is used both in cooking and to sweeten coffee. White sugar is little used, but occasionally is purchased to make a preserve or to sweeten rice gruel or lemonade. Honey is a minor item in the diet nowadays. That of the Old World bee is considered the tastier and

[82] Pin is the generic term for chili. The local wild form is known as the sta ʔka ʔpin, when green; as sa·wɔ̀wapin, when dry. Similarly, the cultivated chili is called kalanqapín (thick chili) when green, and tilípin, when dry.

generally is diluted with water, so that "it will not be injurious." Honey of the native bee occasionally is eaten with *pan de agua* (a bread said to be made of flour, salt, and water, without egg); generally, it is used only medicinally.

### OILS AND FATS

The Totonac are blessed with a wide variety of vegetable oils, although none is available in great quantity. Several evidently are native and presumably were used in prewhite days.

There are various kinds of avocados, the fruit of which has a high oil content; generally it is eaten with tortillas, much as we eat butter on bread, but accompanied by the ubiquitous chili sauce. Although there is an abundance of avocados, they are not eaten with great enthusiasm; it is believed that overindulgence may be fatal.

Other plants produce their oil in the form of seeds, which are treated according to an established pattern: they are toasted on the baking plate, then ground to release the oil. Seeds of one of the local squashes (*pipián*), of the physic nut (*Jatropha*, No. 192), and of the local, perennial cotton (Nos. 8, 9) all are prepared thus, before they are added to a variety of dishes. Diáz del Castillo (1:191) remarks that the Totonac of "Cempoala" eat cotton seeds, and it seems probable that this oil was of greater importance formerly than it is today. Presumably, it has been largely replaced by sesame and hog lard.

Infrequently, the nut of the *coyol* palm (probably *Acrocomia*, No. 362) is substituted for squash seed or sesame, but the use of palm oil is negligible. However, *coyol* nuts are a great favorite with the children, who crack the shells between stones and nibble the contents with evident relish.

It is possible that in former times the seed of the *zapote cabello* (*Licania*, No. 90) also provided a vegetable oil. The seeds were broken, boiled, dried in the sun, and "ground as if they were *pipián*." The latter statement suggests an oily product. Since the seed of a tree of the same genus produces oil in such quantity that it is exploited commercially, possibly the *zapote cabello* shares this property on a smaller scale (Standley, p. 343; Martínez, 1928, pp. 64–65).

The peanut is grown occasionally, as a garden curiosity (No. 313), but cannot be considered a local food product—either now or in ancient times. Yet, despite the lack of this important American cultivate, it would appear that in aboriginal days the Totonac were pretty well provided with vegetable oils.

In historic times, the sesame has become a significant source of oil; its seeds are treated precisely as are those of most native plants. Moreover, the castor plant—introduced, but naturalized—is exploited occasionally for its oil. Two kinds of castor (Nos. 249, 250) are distinguished, a white and a red; it is the seed of the latter which is used in cooking. We asked concerning the taste and were told, "It has the flavor of oil."

Although sesame is important, it has by no means replaced the native vegetable oils. On the score of fats, the chief Old World contribution undoubtedly is hog lard. This is highly prized and is used extensively, at least by the families who can afford it.

### VEGETABLES AND FRUITS

*Vegetables.*—In our sense of the word, vegetables are little used in Tajín. One of the most important is the wild tomato, which is both plentiful and popular during much of the year; chili has been treated above, under condiments.

Several wild plants are eaten as greens. Two kinds of *quelite* (*Amaranthus*, Nos. 104, 105) are distinguished, both edible in December and January. The boiled leaf is served with oil of sesame, squash seed, or physic nut, with coriander, chili, and *cebollina* added for flavor. One housewife prefers to dip the leaves in egg and fry them; another adds the boiled leaves to beans. The leaf of *quitacalzón* (*Phytolacca*, No. 29) is boiled, then chopped and fried with egg, or added to a pot of beans.

Perhaps the most popular wild green is the young leaf of *yerba mora* (*Solanum*, No. 6), which is boiled and drained, then boiled anew in fresh water, to remove a bitter element; usually the cooked leaf is combined with egg and fried. A composite (*Sonchus*, No. 93) is treated similarly; "the older people still eat this plant, but the young ones do not care for it." Another composite (*Porophyllum*, No. 5) is eaten entire, raw, or is combined with chili sauce and tortillas, to make a variant of *enchiladas*. Once in a while, the young leaf of *lelekes* (*Leucaena*, No. 38) is nibbled raw. It is said that in Talaxca, the leaf of the Jalapa

purge (*Ipomaea*, No. 286) is added to beans, together with half a lime; it is not clear whether the leaf serves as a green or only as seasoning. This dish seems to be unknown in Tajín, except among families with strong Talaxca ties.

Buds and flowers of the (wild? semicultivated?) yucca (*flor de pito*, No. 230) are eaten when available. The petals are stripped from the blossoms and are boiled; they are drained two or three times and reboiled in fresh water. They may be added to *mole* sauce or to beans; they may be eaten with *púlacles* (p. 154); or they may be combined with the dry paste of sesame seed, from which the oil has been extracted. This latter mixture is shaped into small balls, which are made into a soup, flavored with wild tomato, coriander, and *cebollina;* sometimes the balls, combined with shrimp and goosefoot, are served as a soup.

Few cultivated plants are prepared as vegetables. Although popular in many parts of Mexico, squash blossoms are not utilized in Tajín. The leaf and flower of the *chipila* (*Crotalaria*, No. 91) are boiled, seasoned with a bit of goosefoot, and eaten. As will be seen later, this particular dish may be of important nutritive value (pp. 169–170). The blossoms of a cultivated tree, also of the legume family[83] (*pichoco*, *Erythrina*, No. 284), are made into a dish not unlike string beans in appearance. The "head and vein" are removed, and the remaining parts are boiled, being drained one to three times, and reboiled, to remove the bitter taste. The cooked blossom is served unadorned; it is mixed with egg and fried; or it is added to beans, together with a bit of goosefoot for seasoning.

Shelled green beans sometimes are eaten (p. 157), but never the pod. Green peas, as a vegetable, have been mentioned previously (p. 158). Tronchuda cabbage (No. 285) is far from popular, but once in a while the leaf is eaten green; sometimes it is boiled and served with sesame oil; or it is fried with egg. During our stay, neighboring Totonac youngsters sampled our food with great relish, but drew the line at both beets and carrots, with which they were unfamiliar.

*Fruits.*—Fruits, cultivated and wild, native and introduced, are both plentiful and varied but, on the whole, little exploited. The Totonac have no prejudice against fruits, merely a supreme disinterest. A *zapote chico* bears heavily but nobody bothers to harvest. If inquiry is made, the reply is, "Oh, we leave the fruit for the youngsters." Actually, Totonac diet could be greatly expanded and improved, simply through more extensive utilization of fruit products at hand.

Native fruits include three cultivated hog plums (*Spondias*, Nos. 290, 291, 292). Two bear in June, the third, in the fall. The fruit generally is eaten raw but sometimes is boiled with brown sugar. That of a wild relative (*jobo*, No. 186) is collected occasionally.

The cultivated papaya is utilized on a small scale. The green fruit is peeled, soaked in a lime solution, then cooked with brown sugar; ripe fruit is eaten raw. Some affirm that the small fruit of the wild form (No. 172) is boiled with brown or white sugar to make a preserve; others are dubious of its utility.

The pineapple is little grown and little used, although vinegar is prepared by allowing the rind to ferment in water for about a week.

Several trees of the sapote family produce edible fruit. These include the cultivated *zapote mamey* (*Calocarpum*, No. 350), the semicultivated *zapote mante* (*Pouteria*, No. 220), and the wild *zapote chico* (*Achras*, No. 191). The unidentified *zapote de calentura* (No. 198) may also be of the same family; it is not cultivated, but from time to time its fruits are collected.

Several other fruit trees are called sapotes, although they belong to distinct families. These include the *zapote prieto* (*Diospyros*, No. 125) and the *zapote domingo* (*Mammea*, No. 127), both cultivated. Once in a while, the fruit of the semicultivated *zapote cabello* (*Licania*, No. 90) is gathered; it may be sold in Papantla, where it is popular for the offering to the dead on All Souls' Day.

Of the above fruits, only the hog plums, the papaya, the *zapote chico*, and the *zapote cabello* are eaten with any frequency. In addition, there is a long list of fruits below, which are by no means a regular part of Totonac diet, but which are consumed occasionally as tidbits. Sometimes adults indulge, but children exhibit greater interest.

[83] One woman had heard that the blossom of the *muite* (No. 123) was edible. This plant is of relatively recent introduction and, as far as we know, is not eaten in Tajín.

*a.* The fruits of several legumes are utilized—either the entire pod, the seed, or the pulp surrounding the latter. Young pods of the semicultivated *lelekes* (*Leucaena*, No.

196*a*) are nibbled entire, as are those of the wild form (No. 38). When mature, only the pith and the seeds are eaten, uncooked. Increased consumption probably would benefit Totonac diet materially (pp. 169–170).

Children suck the white pulp which surrounds the seed of both the cultivated *chalahuite* (*Inga*, No. 195) and the wild form (No. 181). Occasionally the skin is removed and the seed boiled with salt, to serve as a confection. Youngsters also are fond of the pith within the pod of a wild *Pithecellobium* (No. 203).

*b.* The cultivated *gurupillo* (*Couepia*, No. 339) produces a fruit which is eaten raw.

*c.* Upon rare occasions, children eat the fruit of the *chote* (*Parmentiera*, No. 10), which is considered more suitable for stock. This is in contrast to practice elsewhere, for in markets near Mexico City the cooked fruit occasionally is offered for sale by vendors who claim to bring it from the neighboring State of Morelos.

*d.* The fruit of a wild tree known as *puán* (*Muntingia*, No. 37) sometimes is collected, to be eaten by the family or to be sold on small scale in Papantla.

*e.* A *monte alto* fig (*higo*, *Ficus*, No. 221) produces a small fruit so little prized that informants are divided in opinion as to whether or not it is edible.

*f.* The *ojite* (*Brosimum*, No. 98) is another *monte alto* tree. Its small, round fruits are collected, shelled, and boiled with salt; or they are stewed with brown or white sugar. Local use is very limited.

*g.* Four small trees or shrubs are called *capulín* (*Ardisia*, No. 21; *Eugenia*, Nos. 41, 85; *Parathesis*, No. 327); all produce fruits which are collected sporadically.

*h.* The *guayabillo* (*Calpytranthes*, No. 208) is a *monte alto* tree; its relative, the *guayabo* (*Psidium*, No. 326), is at most semicultivated. Both yield edible fruit; that of the latter is eaten raw or stewed.

*i.* The annonas are not prominent locally. We collected one wild form (*anona de mono*, *Annona*, No. 57) whose fruit is edible, "but it is small."

*j.* The wild *Guazuma* (No. 218) is little esteemed, but "some eat the fruit; it is sweet when ripe."

*k. Manzanilla* (*Malvaviscus*, No. 18) is a wild shrub on whose fruit children sometimes nibble.

*l. Guapilla* (*Bromelia*, No. 283) produces a fruit which may be eaten raw or prepared as a fermented beverage.

*m.* A number of vines bear edible fruit; those enumerated below do not include cultivated cucurbits, since they have been mentioned previously. The *cahuayote* (*Gonolobus*, No. 124) sometimes is planted. Its young fruit is peeled and boiled with white or brown sugar; or it is peeled, squeezed, and the juice poured over brown sugar sirup. Seed of the *pusulucuate* (possibly *Apodanthera*, No. 106) may be eaten "like a pomegranate."

Other vines producing edible fruit are: *chápiso* (No. 156); *tomate de guajolote* and *granada del monte* (both *Passiflora*, Nos. 51, 162); *bejuco de parra* (*Vitis*, No. 187); *nigua del puerco* (*Paullinia*, No. 52); and probably another vine related to the last (cf. Nos. 207, 246).

*n.* Two unidentified wild plants credited with edible fruits are the *pitaya de ardilla* (No. 163) and the *chataya* No. 315). The latter sometimes is sold in Papantla.

Introduced fruits are relatively limited in number. The mango ripens in summer and is eaten raw; it is not sufficiently plentiful to be sold. Citrus fruits are quite common, particularly the orange and the *lima*. Both are eaten raw; the juice of the bitter orange or of the lime (*limón*) is squeezed into water to form a sort of lemonade, which is sweetened with white sugar or with honey from the Old World bee.

Of all fruits, native or introduced, the banana is the only one of major importance in Totonac diet. Its use has been described above, in the discussion of starchy foods. Vinegar is made from both the *plátano Roatán* and the *plátano durazno*. The fruit is placed in a clay pot, without the addition of either water or sugar. A cloth is tied tightly over the mouth of the vessel, and as the banana disintegrates, it produces a liquid which, at the end of a couple of weeks, is strained and used as vinegar. The latter also is made from the rind of the pineapple, as noted above. Vinegar serves occasionally to cure chilis or in making sausage; it also is considered medicinal.

### BEVERAGES

*Nonalcoholic beverages.*—Coffee and atole are the chief nonalcoholic drinks of the Totonac. When there are funds for such a luxury, commercial coffee is purchased in Papantla; but more frequently, a maize substitute, optimistically called coffee, is served. It is prepared by toasting dry kernels of maize on the baking plate until they are well carbonized; the burned grains then are ground and used in lieu of commercial coffee. When a Totonac speaks of coffee, generally he refers to this innocuous substitute; commercial coffee, as a rule, is bought only for special occasions. And even at large and important fiestas, the maize substitute is served. Both legitimate and illegitimate coffee are heavily sweetened with brown sugar.

Probably chocolate was considerably more important in former times than it is today. Díaz del Castillo (1:174) notes that among the Totonac of "Cempoala" and "Quiahuixtlan," cacao is "the best thing that they drink." Cacao formerly was grown in the Papantla zone (Suma, No. 449), but as far as we know, not a plant survives today.

At present, chocolate is used almost exclusively for feasts. The bean is bought in Papantla and is ground on the metate, together with a couple of

hard-boiled eggs, cinnamon, and toasted bread. It then is shaped into small round cakes. Chocolate—almost invariably made with water, not with milk—is beaten with a special instrument, which is a local product of considerable ingenuity (pp. 195–196). Often, only the froth is served, dropped on top of a cup of atole. Sometimes egg is added, so that the foam will be more abundant.

The local equivalent of lemonade, is made with the juice of the bitter orange or of the lime (p. 163).

If one happens to be in *monte alto* and is thirsty, but there is no water at hand, he cuts the thick stem of the *bejuco de parra* (No. 187) and sucks the liquid it contains. A bromelia (No. 301) also provides water in an emergency. During hot weather, the *caña de puerco* (No. 158), which grows wild along the arroyos, is cut and chewed; it is said to be "refreshing."

*Alcoholic beverages.*—The Totonac, especially the men and the elderly women, are enthusiastic imbibers. Today, the main reliance is upon commercial drinks. Beer is popular and generally is available in the small stores in Tajín; for large celebrations, such as a wedding, it is bought in Papantla, by the carton.

At certain festivals, it is socially correct to offer *refino*, *jerez*, and *anisado* to the guests. The first is distilled cane alcohol, apparently of poor quality, purchased either locally or in Papantla. At feasts it is served plain to the men. *Jerez*, which is sherry only by name and by courtesy, is a sweet red wine; *anisado*, a liquor with anise flavor. Both are purchased for feminine consumption and circulate principally in the kitchen, among the women who assist the hostess in preparing food.

With *refino* as a base, several drinks are made locally:

Seven or eight dry vanilla pods are macerated and *refino* poured over them. The resulting beverage is not considered medicinal; it represents, incidentally, the only local use of vanilla.

Honey of the wild bee is mixed with *refino* to make a drink known as *picadito;* "some like more alcohol than honey." This mixture is considered a cure for stomach ailments.

Various kinds of "punches" (ponči [*sic*]) likewise are regarded as medicinal and are taken principally to treat loss of appetite or a stomach upset; "but some people, for sheer pleasure, drink punch early in the morning."

One such "punch" is made by breaking an egg into warm water and by adding either *refino* or what passes for sherry. The mixture is beaten until it foams, and the froth is drunk.

Another "punch" is made from ginger (No. 32). The tuberous rhizome is pounded, and then boiled with white or brown sugar; *refino* and two or three raw eggs are added; and the thick liquid is drunk.

Similarly, a drink with rue (No. 317) flavor is prepared. A bunch of small sprays is boiled, and alcohol and raw eggs are added. This is taken early in the morning, before breakfast.

Not all alcoholic drinks are commercial, and a number of fermented beverages are made locally, or at least were current in former times. These are known as wines (*vinos*) or *pulques;* neither appears to have a Totonac name.

*Pulque de zarza* is a mildly alcoholic beverage, now little used, made from sarsaparilla (No. 252). The root is cut, roasted on the coals, then chopped and placed in a vessel with water. One informant adds brown sugar at the start; another says that either white or brown sugar is added following fermentation. By the odor, one knows when the drink is ready for consumption. It is "very refreshing" and sometimes is taken to the fields for the enjoyment of men working in the milpa. Exposed overnight to the dew, it is drunk in large quantity as a cure for gonorrhea.[84]

Formerly, fermented drinks were prepared from *capulín* (No. 21), from the ripe fruit of the *guapilla* (No. 283), from one of the annonas (possibly No. 57), and from pineapple. For the latter, rind and flesh were shredded, placed in water, and allowed to ferment. It is quite possible that the simple fermented beverages listed above may be ancient among the Totonac; at least, they are based on plants native to the area.

The same does not hold for *pulque de caña*, the fermented drink most in vogue today. Sugarcane is crushed in the mill and the juice collected in a clay pot or a large copper vessel. If allowed to stand, it becomes sour, "like vinegar"; so that it may ferment properly, an additional substance, known as the *pie* (lees) is added.

This may be prepared from several lengths cut from fresh stalks of uncrushed sugarcane. They are roasted, allowed to cool, and a bit of cane juice poured over them. When this ferments, it forms a sort of vinegar, which is the *pie*. It is added in small quantities, for a day and a night, to the main

[84] A sixteenth-century report from Maxtlatlán notes that sarsaparilla is used to treat venereal disease (*bubas*) and other ailments (Paso y Troncoso 5: 119).

lot of cane juice, as a consequence of which the latter ferments but does not sour.

Sometimes the *pie* is prepared from sections of a vine known as ču·čoks (No. 202). The stem is cut in short lengths which are dropped into the cane juice. Our informant is uncertain whether or not the stem is first roasted. In lieu of the above preparations, a bit of distilled alcohol (*refino*) may be added to the juice, by way of *pie*. The vessel, with a cloth tied tightly over its mouth, is allowed to stand 24 hours, following which the *pulque* is ready. It is a violent green and is considered highly intoxicating.

No liquor is made locally from maize, either from the grain or the stalk. However, a fermented drink based on the juice of the maize stalk apparently was widespread in Mexico in former times. It is barely possible that the *pulque de caña*, now so popular in Tajín, represents a survival, with sugarcane substituted for the cornstalk.

Informants say that years ago, *aguardiente de caña* was manufactured in Tajín. The name implies distillation, but we were unable to obtain details.

## HOT AND COLD FOODS

The familiar division of foods into hot and cold categories is found among the Totonac, as it is in many parts of Mexico.[85] We made no particular effort to list foods according to this classification, and the following data were noted more or less incidentally:

Hot foods: onion, chili, ripe squash (*calabaza*), aromatic avocado, nut of the *coyol* palm, sugarcane, orange, papaya, mango, annona, banana, honey of both native and introduced bee, alcoholic beverages, and ice. Cold foods: pork, nonaromatic avocado, manioc, *jícama*, *lima*, hog plum, watermelon, melon, papaya, and guava. Informants disagree concerning the lime and the tomato.

In Tajín, no one seems particularly preoccupied with this aspect of foods, but several characteristic statements follow:

> The honey of the wild bee is hot; if one takes a glass, he may run a fever.
>
> Honey [of the introduced bee] is very hot and is injurious if eaten alone; mixed with water, it does no harm.
>
> Cooked, dry squash [*calabaza*] is very hot. One should not eat preserve or atole made of it and then drink cold water. It affects the kidneys.
>
> Avocado [which is cold] does no harm if eaten with chili, salt, or tortilla. But if taken alone, it causes diarrhea. However, the aromatic avocado is very hot and does no harm.

## SAMPLE MENUS

Below are a few observations concerning meals eaten by the head of the family in several households. The latter are numbered. Families 21 and 28 are of better than average means; family 35 is impoverished and probably undernourished; the others perhaps may be considered representative.

The data are by no means as precise as they should be, nor are they as extensive. However, they give a fair idea of random sampling in a number of homes. In no case is a feast involved, and in no case were we expected as guests. Almost without exception, the "coffee" is the local charred maize substitute (p. 163). Since most of our observations were made during cool weather, atole is scarcely mentioned; it enjoys greatest popularity when the temperature soars.

### *Breakfast*

No. 20. 6 plantains, each cut in 4 slices and fried; coffee.

No. 20. *Gorditas* (p. 154) (not counted) with chili sauce; coffee.

No. 20. 10 *enchiladas;* coffee.

No. 21. 18 tortillas; 2 eggs; 2 cups coffee.

No. 28. 12 plain tortillas; 6 *enchiladas* (in this case, tortillas, with chili sauce, sprinkled with cheese); plate of beans; 2 cups coffee.

No. 35. Tortillas (not counted) with chili sauce; coffee.

No. 43. Tortillas (not counted) with chili sauce; 1 egg; coffee.

No. 43. Tortillas (not counted) with chili sauce; chicken broth (the latter a gift of a neighbor).

### *Dinner*

No. 16. 4 *enchiladas* (in this case, tortillas fried with wild chili and tomato), served with small amount of cracklings; less than 1 cup fermented atole.

No. 16. 6 tortillas; 1 plate of beans; 1 cup fermented atole.

[85] The general distribution and the strength of this notion in exclusively mestizo areas suggest that it is of European introduction. In passing, it may be noted that, in 1581, a Spanish official, writing a report on a Totonac pueblo of the Sierra is perfectly cognizant of this classification, for he remarks that a certain plant, *"cacaguasuchil,"* is added to chocolate, "so that the coldness of the cacao may not be injurious" (Relación de Hueytlalpan).

The concept of hot and cold foods evidently extends to South America. In northern Peru, Gillin (p. 54) encountered this division of foods, but regards it as "something embedded in the matrix of curative magic."

No. 16. 10–11 tortillas; 1 plate of *mole* (4 small pieces of pork in chili sauce); 1 cup fermented atole.

No. 20. 7–8 tortillas; 1 plate beans; coffee.

No. 20. 8 tortillas; 1 dish spaghetti; coffee.

No. 20. 8 tortillas; 1 egg, served with wild tomatoes; coffee.

No. 20. 9 tortillas; 1 plate fried beans with chili sauce; coffee.

No. 21. 18 tortillas; 1 serving of meat (kind not recorded); 1 cup broth; 1 cup atole; coffee.

No. 28. 8 tortillas with chili sauce; 1 plate spaghetti, with small piece of chicken; 1 cup coffee.

No. 35. Plantains (fried? roasted?); coffee.

No. 43. Tortillas (not counted); 1 plate beans; coffee.

No. 43. Tortillas (not counted); 2 eggs with chili sauce; coffee.

No. 147. 12 tortillas; 1 scrambled egg, with chili sauce; 1 cup coffee.

*Supper*

No. 20. *Bocoles* (p. 154) (not counted), fried in lard and salted; chili sauce; coffee.

No. 20. 10 *bocoles;* coffee.

No. 20. 1 plate beans; coffee.

No. 21. 10–12 tortillas; *enchiladas* (not counted), served with young squash, fried; 1 helping rice; coffee.

No. 35. 1 plate beans; coffee.

No. 43. Tortillas (not counted); 1 plate beans; coffee.

No. 43. 1 plate beans; chili sauce; coffee.

A man frequently carries his lunch—for example, if he is working in a milpa far from the house and does not come home at noon; if he lives far from the *fundo legal*, and presents himself there 1 day a week for communal labor; or if he goes on any sort of hunting or fishing excursion. Most of these lunches consist chiefly of *enchiladas*, which are tortillas, brushed with chili sauce, and doubled so that the flavored surface is on the inside. Here follow some observations concerning lunches:

No. 2. (2 meals, for 3 persons.) 40 tortillas; "many" small cakes made of maize dough, green peas, and dried fish; 2 small tins of *chile serrano*, purchased at a store along the road; 1 bottle coffee.

No. 3. 9 *enchiladas;* a tenth remained, which the individual finally ate, simply to be rid of it; bottle coffee.

No. 29. *Enchiladas* (not counted); 1 hard boiled egg; bottle coffee.

No. 36. 15 *enchiladas.*

No. 131. "Stack" of *enchiladas;* "several" *bollitos* (p. 153).

No. 147. 10 *enchiladas;* small amount (ca. 125 gm.) jerked beef; chilis.

Not recorded. 10–12 *enchiladas;* chilis; 2 hard-boiled eggs.

Not recorded. 12 *enchiladas.*

Children who live far from the school also carry their lunches. Most appear to consist of 10 to 12 *enchiladas.* Within the fold of the tortilla, in addition to chili sauce, there may be a bean filling, less frequently, one of boiled egg or meat.

## DIET

### CARBOHYDRATES

Maize is the mainstay of the Totonac cuisine and is, at the same time, an important source of starch. At many meals, tortillas are the main dish—sometimes, the only dish of solid food. One of our friends claims to eat 18 to 20 tortillas in the morning; a similar number at noon; and in the evening, "very few," only 10 to 12. His estimates are confirmed by his wife. Moreover, the individual is the head of a family (No. 21) whose tortillas generally are accompanied by other foods, not infrequently by eggs or meat. However, most Totonac consume tortillas in greater moderation (pp. 165–166).

For 30 families, we have information concerning the amount of maize prepared as *nixtamal.* Every housewife knows how many *cuartillos* (3 liters) of maize she steeps with lime and how many times a week this operation is performed. The figures give a rough measure of the maize consumed in the form of tortillas, several kinds of corn gruel, and a number of other maize dishes. They do not, however, include a number of maize foods which are not based on *nixtamal*—for example, the popular fermented gruel of purple corn. Perhaps this error is offset by the fact that young chicks are fed maize paste, prepared from *nixtamal*, and that dogs and cats eat tortillas. It was quite impossible to disentangle this animal consumption from general household requirements.

Obviously, the figures are only an approximation—not only for the reasons given above, but also because local measures are somewhat elastic. We bought five lots of white corn in Tajín, each duly measured and pronounced to be a *cuartillo* (3 liters). Later, the volume was checked with a standard liter measure in Mexico City. One lot was complete; two fell only slightly short; one lacked almost a full liter; and the fifth lot, purchased when the corn was relatively fresh, had shrunk so in drying that only a bit over a liter represented the original purchase, supposedly of three. Accordingly, there is considerable latitude in the original measure of a *cuartillo.*

Figures given by housewives for *nixtamal* consumption were converted into the maize requirements for the family over a period of 6 months (harvest to harvest). Later, they were converted into the daily maize consumption per individual.[86] Estimates range from 0.44 to 1.10 liters of maize per day for each adult, with an average of 0.732. One family (No. 35) has been excluded because its consumption was so far below normal that it would have warped the average unduly; its daily maize requirement is only 0.27 liters per individual. However, in this particular household, the banana consumption is said to be unusually high, and the head of the family, probably untruthfully (for he is notorious as a poor provider), claims that bread is eaten with great frequency.

In order to have basis for comparison with other areas, and with Mexico as a whole, our five samples of white corn have been weighed. The standard liter measure, not the variable one used in Tajín, weighs from 750 to 790 gm. per liter, with an average at 770. Accordingly, it may be said that maize consumption in Tajín ranges approximately from 339 to 847 gm. a day, with the average at 564 gm. for each adult.

This is somewhat lower than the figure given for the Maya (1.31 pounds: 640 gm.) (Steggerda, p. 127). Both Maya and Totonac estimates include maize fed in the form of tortillas to cats and dogs; and the Totonac figure includes also the small amount of maize dough given to small chicks. As noted above, in Tajín these probably are more than compensated for by maize dishes which are not based on *nixtamal*.

For Mexico at large, the average maize consumption is said to be 0.28 kg. (280 gm.) daily, and many "people of low economic status consume as much as 700 gm. of corn in this fashion" (Harris, p. 974).[87] The Totonac average, based on a relatively small number of cases, is about double that for Mexico as a whole. This probably is as it should be, since maize is the chief food. As a matter of fact, the general average probably is somewhat deceptive. In many parts of Mexico, beans are extremely important; in others, corn is the mainstay. Moreover, the average must have been lowered appreciably by the inclusion of urban areas, where bread shares the honors with tortillas. It would be more meaningful if we could have separate figures for rural and urban zones.

In addition to maize, many other local foods provide the Totonac with starch. Of these, the banana and plantain are most important, followed by cucurbits and a series of starchy roots, and tubers (pp. 155–157). Moreover, crackers, spaghetti, and other paste preparations are popular, and bread is an occasional modest luxury. On the whole, the Totonac are abundantly supplied with starches.

Sugar likewise is plentiful. The present-day role of honey in the diet is very minor, but cane is one of the principal crops, and a highly palatable brown sugar is prepared from its juice. In all the households with which we are acquainted, this brown sugar is used generously. Five families were able to give approximate estimates of their annual consumption of brown sugar:

| Family No.: | Number of persons in family [1] | Annual consumption in terms of *mancuernas* | |
|---|---|---|---|
| | | Total | Per individual |
| 3 | 4.5 | 100 | 22.2 |
| 21 | 13 | 276 | 21.2 |
| 23 | 5 | 130 | 26.0 |
| 27 | 9 | 352 | 39.1 |
| 42 | 4 | 104 | 26.0 |

[1] Children of less than 1 year have been disregarded; those from 1 to 4 years have been counted as half; and children of 5 years and more are classed with adults.

Even if the estimates were accurate, it would be difficult to express the *mancuerna* in terms of weight. It is said that there are two sizes, one weighing slightly less than a kilogram, and one weighing approximately 1.5 kg.; one selected at random weighs 1.1 kg. If we take this arbitrary figure, it may be said that, on the basis of data from only five families, the annual consumption of brown sugar per person ranges from about 23 to 43 kg. All but one of the cases cluster about the lower figure, and it seems likely that family No. 27 overestimated its consumption. Incidentally, the lowest estimate is that given by family No. 21, which happens to be one of the more prosperous, better-fed households.

This lowest figure (23 kg.) is equivalent to about 51 pounds. The annual consumption of refined

[86] In this calculation, children of less than 1 year of age have been disregarded; those from 1 to 4 years have been counted as half; and children of 5 years and more have been classed with adults.

[87] We question the coupling of "low economic" status with high maize consumption. The Maya, and perhaps the Totonac, are among the heaviest maize consumers in Mexico, yet their general economic condition is far better than is that of most other Indians and of a good many mestizos.

sugar in the United States—calculated for an "adequate diet at moderate cost" and for a "liberal diet"—is 60 pounds (Cummings, p. 200). Accordingly, it would appear that the Totonac are moderately well provided with sugar—since the calculations above are based on the smaller *mancuerna;* since brown sugar occasionally is supplemented by white; since fresh cane is chewed with enthusiasm; and since honey is eaten from time to time.

### PROTEINS

Proteins come principally from eggs and legumes, with fowl, meat, fish, and assorted game constituting a secondary source; corn, of course, provides a certain amount daily.

Most families in Tajín keep chickens, turkeys, or both, and eggs are available throughout the year, although relative abundance varies. Nevertheless, they provide the only constant animal protein in local diet.

In many parts of Mexico, beans are ubiquitous, but in Tajín, they are somewhat of a luxury, although served more frequently than is meat. We have no concrete figures, but as a guess, beans are eaten, at most, on an average of 2 days a week in the majority of households. In one case, a housewife lamented that it was "a long time" since she had tasted either beans or meat.

Meat of any description falls definitely among luxury foods. Little Maclovio Calderón, aged 3, was asked to name his favorite food; unhesitatingly, he replied, "*carne.*" In most families, meat certainly is not eaten more than once a week, and for many it is exclusively a feast dish.

Fowl is the meat most commonly available, and it is not unusual for the family to kill a chicken for a minor celebration. Next in importance is pork. Butchering is relatively frequent when the fields are being cleared and planted, for then it is a matter of prestige for each household to serve the workers a bountiful meal, with *mole*—either of pork or fowl.[88] Beef is of scant importance and the little that is eaten is purchased in Papantla; when pork is not available locally, it, too, may be bought in town. Of late, in 1949, the consumption of both pork and beef has been reduced to negligible terms, indirectly the result of efforts to eradicate the hoof and mouth disease. Popular opinion is that sterility results from eating the flesh of animals which have been injected against the malady. As a consequence, the Totonac of the Papantla hinterland have declared an informal boycott on such meat, and butchering in Papantla appears to have been reduced materially.

Cheese is eaten occasionally, and the more prosperous families purchase in small quantity in Papantla, from time to time. One household, better stocked than most with city merchandise, buys 250 or 500 gm. about twice a month, for a family of two adults and three small children. All regard cheese as a luxury.

Presumably, the protein intake is augmented considerably by other foods, particularly by maize (Anderson et al., p. 1129), which is eaten daily, and by sesame and squash seed,[89] utilized less frequently.

On the whole, it seems almost certain that Totonac diet is deficient in high quality protein. Although a number of foods are mentioned above, except for eggs and maize, none is available constantly or in quantity. Beans are more plentiful than meat, but are not raised successfully in Tajín; both meat and cheese are luxury items; and the supply of fish and game is extremely limited. Other presumed sources, such as sesame and squash seed, probably are not eaten in sufficient quantity to be very significant.

If a high-yield protein crop could be adapted for local planting, local diet might be benefited materially. We have noted above that soybeans are being tried at present. Another possibility is larger-scale utilization of the pigeon pea (*Cajanus*, No. 95), which is a food of "considerable potentiality" (Munsell et al., p. 7).[90]

[88] Even at fiestas, the servings of meat are frugal. For one feast, we are told that 6.5 kg. of pork served 60 persons—about 108 gm. the plate. One informant calculates that 20 kg. of pork are sufficient for two meals for 60 persons. In short, 120 servings are extracted from the 20 kg., or about 166 gm. per plate.

At fiestas, nothing is wasted. Often food left on the plate is returned to the kettles, to be served anew, and late-comers may find odd bits of tortilla in their *mole.* However, upon occasion, we have seen food scraped from the plates with half-consumed tortillas, and fed to the dogs.

[89] Assays of sesame and of the seed of two samples of *Cucurbita pepo* L. have been published (Cravioto et al., table 3); we have seen no report concerning *C. argyrosperma* Hort., the cucurbit seed used in Tajín.

Moreover, the tested sesame is from Guerrero and the squash from Morelos. Without specific analyses of Tajín specimens, it is difficult to say to what extent their nutritive value resembles or differs from that of similar products grown elsewhere.

[90] Both immature and presumably dried seeds are fairly high in nitrogen (Munsell et al., p. 7, table 2; Cravioto and Miranda, No. 211).

### OILS AND FATS

On the score of oils and fats, the Totonac are pretty well provided. Avocados are abundant, during season, but are eaten with restraint (p. 161). Other oil-producing plants include the seed of the squash (*Cucurbita argyrosperma* Hort., pp. 136–137, 161), of the physic nut (*Jatropha*, No. 192), and of the perennial cotton (*Gossypium*, Nos. 8, 9). Oil of the *coyol palm* (probably *Acrocomia*, No. 362) is used so rarely as to be negligible. Introduced plants—principally the sesame, but to a lesser degree, the castor bean (*Ricinus*, No. 249)—likewise are exploited for kitchen oils. Moreover, a good many families are sufficiently prosperous, at least following the sale of their vanilla and brown sugar, to be in a position to purchase hog lard.

### MINERALS AND VITAMINS

On the basis of published analyses of foods from several parts of Mexico and from Honduras, we may guess, in a general way, some of the minerals and vitamins supplied by Totonac diet. The guesses are no more than that, because, with two exceptions, analyses have not been made of specific food plants from Tajín. Even when a published assay refers to the same species as are found locally, there is little assurance that the same plant, grown in coastal Veracruz, has the same food value that it has when grown elsewhere. Moreover, relatively few analyzed plants are of the species found in Tajín, and it is extremely hazardous to assume that several plants share the same qualities simply because they belong to the same genus.[91]

There is little doubt that the Totonac are abundantly provided with calcium. Their drinking water apparently is heavily impregnated with lime, and they are further supplied through the tortilla[92] and other maize dishes based on *nixtamal*.[93] In short, despite the virtual want of dairy products, calcium intake appears to be more than sufficient.

Phosphorus is provided by the tortilla, beans, and dry chili; by sesame and squash seed, whose oil is used frequently, if on small scale; and among little-used foods, by the pigeon pea and *Leucaena*.[94] The monotonous function of goosefoot (*Chenopodium*, No. 75) as seasoning may be all to the good, for this plant appears to be useful for calcium and phosphorus metabolism (Cravioto et al., p. 325).

The Totonac may be deficient in iron. Egg is rich in this mineral; the tortilla apparently provides a small amount, as do beans and dry chili; occasional minor sources are pigeon pea, *Crotalaria*, and *Leucaena*.[95] For an increase in iron intake, the *Crotalaria* perhaps offers the best possibilities. It appears likely that coriander, a favorite Totonac condiment, contains considerable manganese (Cravioto et al., p. 326).

Of vitamins, carotene (pro-vitamin A) undoubtedly is derived from chili, the wild tomato,[96] and coriander. It is possible that local chenopodium and amaranths may also contain some carotene.[97] A potential local source of apparent importance is *Crotalaria*, now little exploited. Although leaves of the sweetpotato and manioc

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[91] As a matter of fact, not only does nutritive value vary from one species to another, but even the same species, grown in different places, may be quite distinct in assay value. For example, two samples of *chayote*, listed as the same species, come respectively from Morelos and Veracruz; but the latter proves to contain almost four times as much calcium as does the former (Cravioto et al., table 1). A more extreme case is provided by the hog plum. Two specimens, declared to be the same species, come, one from Guerrero, the other from the Federal District (purchased, not grown, there). The former contains 15 times as much iron as does the latter (Cravioto and Miranda, Nos. 106, 110).

[92] Harris (p. 975) points out that "the Mexican has achieved an adequate calcium intake, for the average daily consumption of 280 gm. of tortilla furnishes more than 500 mg. of calcium in available form." It will be remembered that the Totonac maize consumption (chiefly in the form of dishes based on *nixtamal*) is about twice that of the general average for Mexico.

[93] Moreover, it seems likely that other local foods will prove to have a high calcium content, for example: goosefoot (*Chenopodium*, No. 75) and sesame (Cravioto et al., tables 1, 3). And the same holds for relatively little-used foods, such as *Crotalaria* (No. 91) (Cravioto and Miranda, No. 47) and *Leucaena* (Nos. 38, 196*a*) (Cravioto et al., table 3).

[94] Tortilla (Anderson et al., p. 1130); beans and dry chili (Cravioto et al., tables 3, 4); sesame and squash seed (Cravioto et al., table 3); pigeon pea (*Cajanus*, No. 95) (Cravioto and Miranda, No. 211; Munsell et al., table 2); *Leucaena* (Nos. 38, 196*a*) (Cravioto et al., table 3; Cravioto and Miranda, Nos. 212–214).

[95] Beans (Cravioto et al., table 3); chili (No. 214) (Cravioto et al., table 4); pigeon pea (*Cajanus*, No. 95) (Cravioto and Miranda, No. 211; evidently variable; cf. Munsell et al., table 2); *Crotalaria* (No. 91) (Cravioto and Miranda, No. 47); *Leucaena* (Nos. 38, 196*a*) (Cravioto et al., table 3; but variable; cf. Cravioto and Miranda, Nos. 212–214).

One *Spondias* tested high in iron; others were negligible (cf. Cravioto and Miranda, Nos. 106, 107, 110).

[96] Two samples of the local wild chili (No. 214) were tested at the Instituto Nacional de Nutriologia, through the kind offices of the Rockefeller Foundation. Our relatively dry sample, presumably including both flesh and seed, ran 1.37 mg. of carotene per 100 gm. Our sample of fresh, wild tomato (No. 24) yielded 3.88 mg.

[97] Chili (Harris, p. 975); coriander (Cravioto et al., table 1; Cravioto and Miranda, No. 28); chenopodium (No. 75) (Cravioto and Miranda, Nos. 67, 68, 89; Cravioto et al., table 2); amaranths (Nos. 104, 105) (Cravioto and Miranda, No. 88; Cravioto et al., table 1).

both [98] may have appreciable amounts of carotene, neither is used as a food in Tajín.

Of the vitamin B complex, thiamine presumably is provided by tortillas and beans, supplemented by chili seed, sesame, and, to a lesser extent, perhaps by the pigeon pea and *Leucaena*.[99] Riboflavin deficiency apparently is general in Mexico (Anderson et al., p. 1130), and there is no indication that the Totonac are better supplied than are other local peoples. "Tortillas, though not high in riboflavin, furnish the major proportion of this vitamin . . . because of the large quantities consumed. Beans rank next in importance" (Anderson et al., p. 1130). Among the Totonac, dry chili should be a useful source.[1]

Furthermore, it would appear that the Totonac are not overly well supplied with niacin. Undoubtedly maize, beans, and dry chili are important sources, supplemented by sesame and squash seed.[2] If the pigeon pea grown in Tajín shares the virtues of related forms from other parts (Cravioto and Miranda, No. 211; Munsell et al., table 2), it also might be useful.

Vitamin C (ascorbic acid) presumably comes from the local wild chili and tomato,[3] as well as from fresh corn (Cravioto et al., table 1). The Totonac appear to have a very considerable supply within reach, but relatively little exploited; and the intake could be increased materially through a larger consumption of citrus fruits, mango, guava, and *zapote negro*. Vitamin D presents no local problems, since exposure to solar radiation presumably supplies a sufficient quantity.

[98] *Crotalaria* (No. 91) (Cravioto and Miranda, No. 47); sweetpotato and manioc leaves (Munsell et al., table 2).

The following appear to be highly variable: sweetpotato (Cravioto and Miranda, Nos. 16–19; Munsell et al., table 2); *Leucaena* (Nos. 38, 196*a*) (Cravioto and Miranda, Nos. 212–214; Cravito et al., table 3); and *Inga* (Nos. 181, 195) (Cravioto and Miranda, No. 216; Munsell et al., table 2). Without specific tests of local products; it is impossible to guess how Tajín specimens will run.

[99] Tortillas, beans (Anderson et al., p. 1130); chili seed (Cravioto et al., table 4); sesame (Cravioto et al., table 3); pigeon pea (*Cajanus*, No. 95) (Cravioto and Miranda, No. 211; evidently variable; cf. Munsell et al., table 2); *Leucaena* (Nos. 38, 196*a*) (Cravioto et al., table 3; also variable, cf. Cravioto and Miranda, Nos. 212–214).

[1] Dry chili (Cravioto et al., table 4). One sample of avocado shows a low content (Cravioto et al., table 2), while another is extraordinarily high (Cravioto and Miranda, No. 4). Again, without assays of foods from the specific area in question, generalization is impossible.

[2] Maize, beans (Anderson et al., p. 1130; Cravioto et al., table 3); dry chili (Cravioto et al., table 4); sesame, squash seed (Cravioto et al., table 3).

[3] Tests of our wild, green chili (No. 214) indicated 54.2 mg.; semidry chili, 48.0 mg. per 100 gm. Since the latter sample contained 61.6 percent water, it was by no means concentrated, and local chili, thoroughly dry, presumably would test higher. Our fresh, wild tomato (No. 24) yielded 54.7 mg.

### SUGGESTIONS

The foregoing summary of Totonac diet is offered somewhat hesitantly. Without specialized training in nutrition, we feel far from competent to discuss such problems; and the lack both of assays of local foods and of concrete measures of consumption makes judgment double difficult. It has been necessary to assume arbitrarily that plants grown in Tajín share, to a certain extent, the qualities of related forms found elsewhere; and statements concerning the extent to which a given food is used are largely impressionistic.

It is clear that the Totonac are abundantly provided with carbohydrates, moderately so with oils and fats. On the score of proteins, soybeans have been distributed to half a dozen Tajín farmers, for trial planting, and a larger scale exploitation of the pigeon pea (*Cajanus*, No. 95) has been suggested. However, the real need is for high quality protein; the only suggestion we can make—greater consumption of squash seed—manifestly is inadequate.

Of minerals, the calcium and phosphorus supply evidently is abundant. Iron might be increased through greater use of the pigeon pea, as well as of *Leucaena* (Nos. 38, 196*a*), which latter now is eaten primarily by children. Greater exploitation of *Crotalaria* (No. 91) would provide additional iron and, at the same time, would increase the carotene intake. Both the latter might be improved materially through the use of the sweetpotato leaf as a green, provided the Totonac could be persuaded to adopt such an innovation.

Of the vitamin B complex, both thiamine and niacin could be provided in larger quantities through increased consumption of the pigeon pea; *Leucaena* also could contribute to larger thiamine intake. Although Totonac diet almost certainly is deficient in riboflavin, on this score, we are unable to offer any suggestion. However, for vitamin C increase, a larger scale consumption of a number of fruits (citrus fruits, mango, guava, *zapote negro*) already at hand should be beneficial.

In short, obvious suggestions, based on rather insecure data, would include greater use of the pigeon pea, *Crotalaria*, *Leucaena*, and assorted

local fruits, as well as the adoption of the sweet-potato leaf as a green. In making these suggestions, we have tried to indicate local products which might be exploited to greater advantage. To use the words of Harris (p. 976), "the solution of the nutrition problem of each country may be found in the proper use of its own food resources," and it would be unrealistic to think of improving Totonac diet in terms of wheat, beef, and dairy products.

## EATING HABITS

The first thing in the morning, the kitchen fire is laid, and black coffee—in most households, the charred maize substitute—is boiled. Sweetened generously with brown sugar, this brew is drunk by most men and a good many women. It is a standing joke among the neighbors that in one family, coffee is available most of the time; "they get up at midnight to make coffee."

In addition to this early morning beverage, the Totonac eat three meals a day of which the noon meal ordinarily is the most substantial. This may be a "recent" innovation, for the ancient Totonac are said to have eaten very lightly, with only 2 meals a day, one in the morning, the other in late afternoon (Las Casas, p. 463). In the poorer households today, breakfast and supper may consist of little more than tortillas, seasoned with salt and chili sauce, and washed down with coffee or atole. "Piecing" between meals is not unusual; probably it is more frequent among the women, who spend the day close to the kitchen, than among the men, who go to the fields where opportunities for nibbling are slight.

If the milpa is at all distant, the man does not return to the house at noon, but carries his lunch in a maguey fiber shoulder bag. The mainstay of every lunch is a stack of tortillas, brushed with chili sauce. These may be piled flat on top of one another, or they may be doubled, with the chili surface on the inside. To keep them soft and pliable, the tortillas are wrapped first in a banana leaf, which has been braised on the baking plate to make it flexible, then further wrapped in a clean cloth. To accompany the tortillas, there may be a boiled egg or, on rare occasions, meat. The Totonac do not know the general west Mexican practice of breaking the upper "skin" of the tortilla and of inserting a filling of egg, bean, or meat beneath it. Often a man carries an additional supply of chili, and he generally tops his lunch with a bottle of coffee or, more rarely, of atole. At noon, he eats the repast cold, despite the fact that he generally carries matches and that firewood is abundant. Some men complain that a cold lunch is not inviting, but no effort is made to heat it.[4] Similarly, children, who come from distant houses to attend school, carry their lunches in maguey fiber bags and eat their food cold.

If the milpa is reasonably close to the house, the woman often prepares the lunch and packs it—including a pitcher of atole or of hot coffee—in her wooden tray. She covers the contents with a neat white cloth, places the tray on her head, and carries the provender to the field.

Although kitchens are disorderly, the Totonac are unusually clean in their eating habits.[5] Before the door of most houses, a forked stick is set in the ground, its crotch supporting a shallow pottery bowl or gourd, filled with water (pl. 19, *a*, extreme left). Before the meal each person washes his hands. He dips water from the bowl, then, to one side, rubs his hands together, so that the water will fall on the ground, not into the vessel. At the conclusion of the meal, he washes his hands again and rinses his mouth with clear water, which he spits into the patio, not on the house floor. When guests are numerous, a pitcher of water is placed near the bowl, so that the supply may be replenished; and a large jar, with a gourd dipper, provides water with which the guests rinse their mouths.

Generally the men of the family eat first, together with any guests who happen to be present. They sit on chairs—sometimes very low ones—about a table, and are served by the women and girls. One informant had heard that in ancient times there were neither tables nor chairs; one sat on a low stool and ate from pottery vessels spread on the ground.

Women and children usually eat later. We know three families in which the wife eats at the table with her husband, at least upon occasion, but

[4] In west Mexico, no self-respecting mestizo muleteer would think of eating cold tortillas, which become extraordinarily unpalatable. Even though the day of travel is long, the *arriero* takes a few minutes to gather firewood. He makes a stiff blaze, and when it dies down, toasts his tortillas or his *tacos* (tortillas with filling) on the coals.

[5] Of the sixteenth-century Maya, it is said: "No acostumbraban comer los hombres con las mujeres; ellos comían por sí en el suelo o cuando mucho sobre una esterilla por mesa . . . Se lavan las manos y la boca después de comer" (Landa, p. 107).

this practice evidently is most unusual. One mother invariably serves her children, starting with the youngest, before she herself eats.

Virtually every family has at least one table. Seldom, however, is it covered with a cloth. This gesture is made only for very special occasions—for example, when the house is honored by a visit from the image of a saint. The use of a tablecloth is so infrequent that a woman guest is able to recall, with startling precision, in just which households and upon what occasions during the past few years she has seen the table so covered.

Dishes are, for the most part, of cheap commercial crockery. The favorite form is a soup plate, which serves either for liquids or solids, and a handleless cup. Crockery and enamel ware, which also is popular, are bought in Papantla. One old gentleman is said to be excessively fussy. If his dishes are not rinsed with lime (*limón*) juice, to remove the odor of previous foods, he refuses to eat. Children usually have their special dishes of homemade pottery, which is so porous that it undoubtedly absorbs bacteria like a sponge.

The universal eating implement is the tortilla, broken and doubled to form a sort of scoop in which the food is carried to the mouth. In this manner, even soup is eaten with neatness and dispatch, although occasionally we have seen a woman raise a plate of soup to her lips and drink directly from it. Often, meat is held in the hand and nibbled. One family boasts a set of spoons, purchased in honor of a visit from the priest of Papantla. This unique equipment was removed from storage for our benefit when we were guests in the house; but both the host and hostess disdained the cutlery and evidently found it more agreeable to eat with a tortilla.

Children eat informally and with a minimum of discipline. A gourd of tortillas is placed so that they may help themselves as they like in the course of the meal. One woman breaks a tortilla in small pieces and drops it into the dish of food prepared for her small child. The youngster then fishes out the tortilla with his fingers and eats it, together with adhering food—egg, beans, or whatever the plate may be. In one house which we visited, the children did not sit down to eat. They ran hither and yon, playing, and nibbling pieces of fried tortilla and hunks of a fresh corn *bollito*, which someone had sent the family as a gift. During their supper, they were outside the house as much as within it.

"A woman eats somewhat less than does a man," and a child eats proportionately still less. Long before a child is completely weaned, he begins to eat adult food. There is, of course, no cow or goat milk, and small children are fed atole. Before a youngster is a year old, he is eating tortillas and egg. All children drink "coffee," the beverage made of charred maize kernels and sweetened with brown sugar. Preparation of food for children is difficult when the mother works in the field. One woman, whom we know, leaves tortillas and coffee for her youngsters and gives them a more substantial meal about 4 o'clock, when she returns from the milpa.

Despite the fact that a child has supplementary feeding from a relatively early age, the prevalence of earth-eating among small children implies a major dietary deficiency. We personally are acquainted with three youngsters who eat earth and, by hearsay, know of several more. One mother punishes her child for this practice; a stepfather is apathetic, saying that the child "will die anyway, for there is no cure."

Like everyone else, the individual Totonac has likes and dislikes in food:

*a.* Don Mauro does not care for fermented atole made of purple corn (a standard dish), hence he plants no maize of this kind.

*b.* Don Manuel ate only four *enchiladas* at dinner one day because they were seasoned with wild chili. He was tired of that flavor and preferred that known as *pico de pájaro*, but none was available.

*c.* When Don Modesto eats soup (*caldo*) or fried egg, he drinks no coffee, because it nauseates him.

*d.* Moreover, he eats an egg only if it has been fried the moment he is ready to eat; if it stands, "he does not like it."

*e.* Don Pablo prefers tortillas and meat to all other foods.

## FEASTS

Feasts are frequent. Almost every house has several small-scale fiestas during the year, when men are helping in the fields, to clear, to plant, or to cultivate. Moreover, some days following the birth of a child, there is a small celebration, attended chiefly by the members of the family. In addition, a good many men in Tajín are members of dance groups or of groups of musicians. These little bands of 10 to 20 men meet for all-night practice once a week during much of the year, and

each session is the occasion for a modest feast. All the above are small gatherings at which there probably is a maximum of 30 persons.

But there are large feasts also, when a family entertains 100, or even 200, guests. As a preliminary to nuptials, the groom brings gifts to the bride's house; this is the occasion for a large festival, with a second on its heels, when the wedding takes place. Moreover, feasts are strongly associated with death—one at the wake; others particularly on the ninth and eightieth days following death; and still another on the anniversary of a year.

Large feasts likewise are associated with certain religious observances. When the image of a saint is brought to Tajín from a neighboring town, the more pious and the more prosperous make arrangements in advance for the *santo* to halt successively at their houses. At each stop, the saint is feted; a dinner is prepared more or less for the public at large; and music and native dances add to the pleasure of the saint. Sometimes—particularly after the sale of the vanilla crop—a family decides to buy a new image for its domestic shrine. When this image is duly blessed, a major festival takes place. Certain special days in the Catholic religious calendar also are celebrated from time to time. At least occasionally, when a new cross is dedicated, there is a big fiesta in the home of the donor, on Holy Cross Day (May 3).

With so many opportunities for festivity, social life in Tajín is sprightly. Since the community is small, a fairly high percentage of the population participates in the frequent round of social gatherings. We should guess that some sort of festival touches most families about once every 2 or 3 weeks.

At all feasts, meat is served in one form or another. For the little family celebration following the birth of a child, tamales are the only acceptable dish. And they likewise are the dish par excellence for most of the feasts associated with death. Generally at the latter, atole, *totopos* (p. 155), and *bollitos de anís* (p. 153) also are standard fare. Upon other occasions, a soup or stew of chicken or turkey sometimes is served, but the most acceptable menu is chicken, turkey, or pork in *mole* sauce, accompanied by tortillas and coffee. So strong is the association of certain dishes with certain feasts that when we artlessly asked if tamales were to be served at a wedding, we were regarded with aghast surprise, and then were told, with great amusement, "If there were tamales, it would seem more like a funeral than a wedding."

Evidently turkey and tortillas were standard company food in the early sixteenth century, for the Spaniards were offered that fare in "Quiahuixtlan," and by certain settlements subject to "Cempoala" (Díaz del Castillo 1: 169, 174). However, we suspect that *mole* sauce may not be ancient among the Totonac. It appears to have no native name and, moreover, one of the chilis considered essential in this dish is said not to grow in Tajín; today, at least, it is purchased in Papantla.

Even for small feasts, the hostess generally is assisted by a few female friends or relatives; and, at large feasts, there is a formidable corps of neighbor women who come, by invitation, to give a hand. Despite the hard work involved, women enjoy the flurry and apparently are much pleased when they are asked "to grind" (maize), to haul water, or otherwise to give a day or two of hard labor gratis. Some women have special skill in preparing certain dishes—such as *tamales* or *totopos*—and they are much sought when a festival is in the offing.

Preparations start sometimes 3 days in advance and not infrequently the visiting cooks remain all night, instead of returning to their homes. The Totonac kitchen is ill-equipped to prepare food for a hundred or so guests, and most of the cooking actually takes place in the open-air patio adjacent to the kitchen (pp. 207–208). Utensils are borrowed from friends, and the whole undertaking proceeds with a minimum of confusion and disorder. Individual festivals will be described in Part 2 of this report.

At large feasts, the men of the household serve the tables,[6] at which guests of both sexes are seated. There is a steady stream of men, often barefooted, who bring tortillas, bowls of *mole*, and pitchers of coffee to the table. They serve quietly and without confusion. We attended one feast where a lone youth attended close to 50 guests; he was unflurried and managed with remarkable dispatch.

Apparently only male relatives, by blood or marriage, are eligible to serve, probably because they have free access to the kitchen, where are clustered

[6] The men waited on table in Texcoco in the days of Netzahualcoyotl (Torquemada 1: 155).

the women of the family, together with neighbor women who assist in preparing the meal. At such feasts, the feminine corps in charge of the dinner remains virtually all the time in the kitchen or in the adjacent patio, where cooking activities are concentrated. After the guests have eaten, the cooks sit together, informally, in the kitchen, or at a table placed in the patio, and enjoy a belated meal.

As a matter of fact, serving problems at feasts are slight. The table is set, usually with a soup plate and a cup at each place. The food is placed in containers in the middle of the table—for example, tortillas in a gourd, *mole* in a bowl, and coffee in a pitcher. Each guest helps himself. Ordinarily, visitors eat in relays. When everyone of the first lot has finished, the diners rise in a body and leave the table free for the next group. Dishes are not washed between relays, and one serves himself in the same plate used by his predecessor. We have already noted that there is no cutlery, but a spoon generally is provided for serving *mole*. The chore of serving table is chiefly one of replenishing the supply of food, as one relay follows another at the table.

Feasts involve a very considerable expenditure, and, for some households, they spell virtual ruin. We know of at least one man who was obliged to sell his land, in order to meet the expenses connected with the funeral feasts for his wife.

Modesto González has calculated the expense involved in giving royal entertainment to the 10 to 15 workmen the day the milpa is planted. A summary of his figures has been given previously (p. 122). He estimates cost at $128.20 pesos, including $13.00 pesos for incense, candles, rockets, and a religious singer. Needless to say, not many households are able to spend so lavishly to have a field planted, and costs and fare vary directly with the economic status of the host. Each family, however, entertains the milpa planters to the best of its ability.

We ourselves gave a *mole* dinner for about 50 persons. Since our establishment was not suitable for large-scale entertaining and it seemed unlikely that we could prepare food to local taste, Pablo González generously offered his house and the expert assistance of his wife and stepdaughters, to supervise the meal. Together with Don Pablo and his wife, the following list of provender was drawn up:

| | *Pesos* |
|---|---|
| For *mole:* | |
| 2 turkeys @ 25.00 | $50.00 |
| 3 kg. of lard @ 4.60 | 13.80 |
| 2 kg. *chile de color* / 1 kg. *chile de mole* | 10.00 |
| 2 oz. cinnamon | 2.00 |
| 2 oz. cloves | .80 |
| 2 oz. black pepper | .80 |
| Bread (*pan semita*) | 1.00 |
| For tortillas: | |
| 2 *almudes* (24 liters) maize @ 2.50 | 5.00 |
| Miscellaneous: | |
| 3 kg. rice @ 1.20 | 3.60 |
| 3 kg. salt[1] | .90 |
| 5 kg. coffee | 12.00 |
| 10 *mancuernas* brown sugar @ 0.50 | 5.00 |
| 4 cartons cigarettes @ 1.05 | 4.20 |
| ¼ kg. leaf tobacco | .75 |
| 10 boxes matches | 1.00 |
| 1 small demijohn alcohol, chiefly for Negrito dancers | 4.50 |
| 1 small demijohn "sherry," for the women cooks | 4.50 |
| 3 kg. hard candy (suggested by us) | 6.00 |
| 1 cake soap (for dish washing) | 1.00 |
| Total | $126.85 |

[1] This is approximately 6.5 pounds of salt, which seems excessive, yet precisely the same amount appears below in the accounts of the Méndez family fiesta. Perhaps it is customary to buy this quantity of salt for any large *mole* feast, whether or not it is used. A neighbor, who overheard our discussions while standing outside the house, told us privately that he thought the lard estimate was "very exaggerated."

Don Pablo donated onions, wild tomatoes, and coriander. Actual expenses exceeded the calculations by nearly $30.00 pesos.

As a further demonstration of the expense involved in a large feast, we have an estimate provided by Leandro Méndez, of the cost of entertaining in honor of the image of St. Joseph in his father's house. Several meals are involved. The ten or so men who made palm ornaments for the altar were given supper one day, and a meal the following morning; moreover, the next succeeding day, the same assistants were served both breakfast and dinner. Apart from these aides, dinner was provided for well over a hundred guests. Probably, in all, between 200 and 250 servings are involved. The dinner fare was, as usual, *mole*, tortillas, and coffee. In addition, as a very special gesture, presumably for breakfast, flour, sugar, and eggs were bought and bread made, probably by

a nephew whose house is equipped with an oven. The estimate follows:

| | *Pesos* |
|---|---|
| For *mole:* | |
| 3 turkeys @ 25.00 | $75.00 |
| 4 hens @ 8.00 [1] | 32.00 |
| 2 roosters @ 10.00 [1] | 20.00 |
| 1 pig | 100.00 |
| .5 *latas* (presumably half a 5-gallon tin) lard | 35.00 |
| Cinnamon | 3.00 |
| Cloves [2] | 1.20 |
| For tortillas: | |
| 9 *almudes* (108 liters) maize | 22.50 |
| For bread: | |
| 6.25 kg. sugar | 5.40 |
| Flour | 28.00 |
| Eggs | 3.75 |
| Miscellaneous: | |
| 3 kg. salt | .90 |
| 10 kg. coffee | 28.00 |
| Brown sugar | 15.00 |
| 3 cartons cigarettes @ 1.15 | 3.45 |
| 3 demijohns *aguardiente* @ 4.50 | 13.50 |
| 2 bottles *aguardiente* @ 1.50 | 3.00 |
| 3 demijohns "sherry" | 7.50 |
| Special items: | |
| 3 kinds of skyrockets | 13.65 |
| Materials for a new dress for the image of St. Joseph, made by the daughter of the family | 50.00 |
| Total | $460.85 |

[1] Price excessive.
[2] Apparently through oversight, chili is not listed.

It is clear why not more than four or five families in Tajín are able to receive St. Joseph on his annual pilgrimage. One man, usually among the hosts, told us regretfully that he had not been able to invite the saint that year, because his supply of maize was low. But corn is a very modest item when the total expense is figured. Feasts are important in the budgets of most Tajín families, although relatively few entertain on the scale of the Méndez. Yet every family is under obligation to offer several large feasts following the death of its members, and it is evident that death is a costly business for the survivors.

## SMOKING

Both men and women smoke. "Some smoke all day, but most, only in the morning or evening, so as not to become dizzy with the heat." One elderly woman feels tired and her legs ache if she refrains from tobacco. Youngsters begin to smoke at an early age, and occasionally one sees a child between 2 and 3 years, seated beside his mother, gravely puffing on a cigarette. Little Maclovio Calderón, aged 3, repeatedly asked us for a *puro*; and his small sister, aged 6, collected all burning cigarette butts in sight and puffed on them.

Commercial cigarettes are smoked quite generally, by both sexes. However, many people, both men and women, prefer to roll a cigar (*puro*); "it lasts longer." Tobacco is not grown locally and that purchased in Papantla is thought to come from the vicinity of Gutiérrez Zamora and Comalteco and from some "unspecified" part of the Huasteca. A leaf is cut to rectangular shape, and shredded tobacco is sprinkled along one edge. This then is rolled, first between the fingers, then between the palms. Occasionally, a host passes leaf tobacco among the guests, so that they may make cigars.

It is said that fifty or sixty years ago, the pipe was in general use, although now it has disappeared completely. Leaf tobacco was rolled between the palms and placed, unshredded, in the bowl. Regardless of type, the pipe is known, curiously enough, as *cachimba* (púškuli?).

Two kinds of pipe were described and models made for us. One (fig. 18, *b*, *c*) is a simple elbow

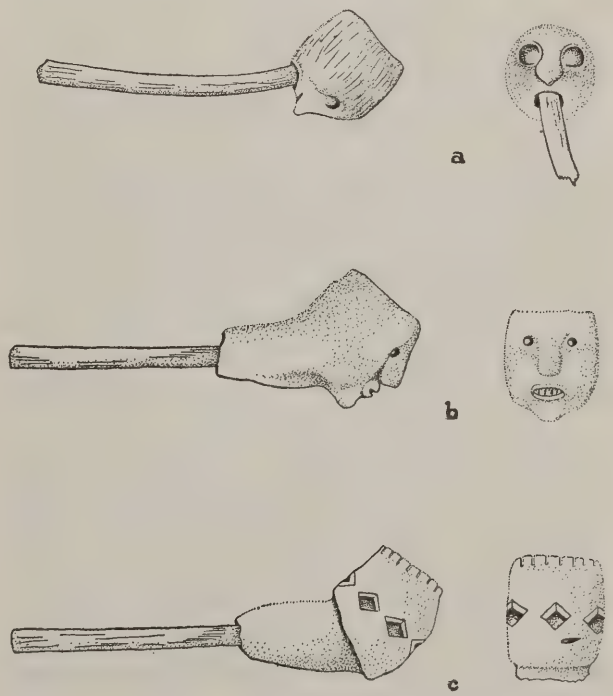


FIGURE 18.—Model pipes. *a*, Bowl of *coyol* palm; *b*, *c*, of clay. See text (pp. 175–176) for description. *a*, Made by Lorenzo Xochigua; *b*, *c*, by Modesto González. Scale: ½ natural size.

pipe of clay, formerly manufactured by the women, but smoked by both sexes. The mouthpiece was made from the steam of any of several different plants (Nos. 201, 271, 336); another plant, not represented by a specimen, is called *cuerno de venado* (sakalaɔ kajúki?). Cane (No. 336) was least desirable, since it heated as the pipe was smoked and turned brittle with use.

The other pipe (fig. 18, *a*) was ingeniously fashioned from the nut of the *coyol* palm (No. 362). A large fruit was selected; the point, not the butt, was sliced off with the machete; and the oily meat was removed. At the base there are three small depressions; one either is connected by a channel with the interior, or is separated from the latter by a very thin skin. This natural cavity was opened somewhat, with a knife, and the central aperture of the nut likewise enlarged. The stem, of the same materials mentioned above, then was fitted into the small natural cavity at the butt. The palm nut bowl sometimes was ornamented with commercial ink—"the kind used for writing."

We know no Totonac who chew tobacco, but allegedly this custom is found among a few; "there even are some who chew cigarette butts and who eat cigarette ash."

## HOUSING [7]

At the time of the Conquest, the Totonac of "Cempoala" are credited with houses "of adobe and others of masonry" (Torquemada 1:396); it is these which gave rise to the old, familiar story of the Spaniard who mistook their white plaster for silver (Díaz del Castillo 1:170; Las Casas, p. 129; Torquemada 1:396). Further reports indicate that floors and patios were plastered and painted (Las Casas, p. 129); there is, moreover, mention of streets, and each house is said to have had water at hand (Torquemada 1:396) and an orchard or garden adjacent. These idyllic descriptions evidently apply to the houses of the "principal people," and the bulk of the population presumably lived in houses similar to the native type found today in Tajín.

As a matter of fact, a specific statement from the late sixteenth century reports that the governor and "some of the principal people" of Jonotla lived in masonry houses with plaster walls, while the remaining inhabitants occupied houses "fenced with sticks and covered with straw" (Paso y Troncoso 5:130). About the same time, the Misantla Totonac house is described as fenced with cane and roofed with straw; earth and stone did not enter into the construction (Relación de Misantla). Presumably, these houses were similar to the type which still prevails in Tajín.[8]

The typical Totonac house (pl. 9, *a*, *b*, *e*) today is simple and is ingeniously constructed of local materials. On the whole, it is well suited to local needs, although it is more comfortable in warm weather than during the chill winter months.

Invariably the ground plan is rectangular or square; the apsidal form [9] is unknown. The roof of four sheds is thatched, with palm, grass, or leaves. It rests on a framework of poles, supported by uprights set in the ground and connected by stringers. The walls, generally added after the roof is fiinished, are of slender upright poles or bamboos, which do not support any of the weight of the roof. Characteristically, the structure is windowless, but light and air enter and smoke escapes through the interstices between the wall poles. Doors, generally in the long side of the rectangular house, are skillfully made of split bamboo.

This appears to be the aboriginal type of dwelling. Ordinarily, it is built of materials found in the *monte* and requires no nails or other introduced refinements. The frame is lashed together with liana, and the same material is used to affix thatch and wall poles to the frame. Sometimes the upright poles of the wall are plastered with mud, giving the superficial impression of an abode structure (pl. 3, *a*).

[7] A number in parentheses, following the name of a plant, refers to the herbarium catalog, which is published in Appendix C.

[8] At present, two main masonry structures are in use in Tajín, both constructed by professional masons from Papantla. One, of stone, is the school; the other, of brick, is at the archeological site, and was built to house the caretaker and, on his occasional visits, the Government archeologist. In addition, the ruins of a stone house, intended as a dwelling, stand on one of the lots of the *fundo legal* (map 7, lot No. 10). These few masonry buildings have been excluded from the current discussions; sweathouses, which often involve rough masonry, are treated separately (pp. 199, 201–202).

[9] The apsidal house, with rounded ends, is common among the Maya of Yucatan and also is found among some of their neighbors (Wauchope, pp. 16–19). It is to be seen occasionally in the Huasteca.

Starr, (p. 268, and photograph facing p. 272) describes and illustrates a house in Pantepec, whose "corners . . . are rounded." However, neither his description nor his illustration appears to apply to an apsidal house.

Certain changes have come with time. Occasionally, wire instead of liana is used as lashing. Some of the more prosperous families build the house frame of substantial, squared timbers, and place on it a tiled rather than a thatched roof. In such cases, the doors may be of wooden planks, with commercial, metal hinges. Often a tiled roof is combined with the usual wall of upright bamboos (pl. 9, *d*), but in a few cases, the walls are of planks (pl. 9, *e*, *f*). Since there are no windows and few doors, such houses have relatively little ventilation and are far less comfortable in hot weather than are the old-style, less pretentious structures.

We have detailed information concerning 74 individual structures which are occupied by 39 families, more than half of whom have a ménage consisting of two or more houses. Most lie within the *fundo legal*, where there is a much higher frequency of tiled roofs and of plank walls than is found on outlying parcels. Our data may be summarized thus:

| | *Number of houses* |
|---|---|
| Roofs: | |
| Palm: | |
| *Palma redonda* (No. 259) | 17 |
| *Palma real* (No. 364) | 20 |
| *Palma redonda* and *real* | 1 |
| Unspecified palm | 2 |
| Grass | 3 |
| Leaves (*misanteca*, No. 169) | 2 |
| Tile | 29 |
| | 74 |
| Walls: | |
| Upright bamboos | 48 |
| Upright poles, various kinds of wood | 14 |
| Either poles or bamboos (entry ambiguous) | 1 |
| Planks | 7 |
| Various combinations: | |
| Poles and bamboos | 2 |
| Poles and planks | 1 |
| Poles, planks, and bamboos | 1 |
| | 74 |

Walls of upright poles or bamboos predominate; of the 65 instances, 6 have a coating of mud plaster. Planks enter into the composition of the walls of only 9 of the 74 houses. In roofing, departure from the presumed native type is more evident, and 29 of the 74 structures are tiled; in 20 of these cases, the tile is combined with pole or bamboo walls.

All told, it would appear that the native type of house is holding its own. It has many advantages; all the necessary materials are available locally; the technical demands are slight, and any Totonac is able to build a house, sometimes with the aid of only one other individual. Moreover, the house is relatively inexpensive to build (pp. 185–186), and is, on the whole, well suited to local needs.

On the basis of our somewhat limited census, we may guess that about one-third of the Tajín families live in a single dwelling. The others have a cluster of two to four distinct buildings, at no great distance from one another:

| | *Number of families* |
|---|---|
| Single house, with or without interior partitions | 13 |
| Two houses | 18 |
| Three houses | 7 |
| Four houses | 1 |
| | 39 |

When a family lives in a single dwelling which does not have interior partitions, obviously the same room is parlor, kitchen, dining room, and bedroom. However, of the 13 single dwellings, 7 have interior partitions, from the floor to a height of something less than 2 m. In two cases, there are multiple rooms, and sleeping, cooking, and living quarters are separated from one another. However, these are sophisticated households, of two local merchants, both from Papantla—one Totonac, the other non-Totonac. Accordingly, both households are atypical.

Of the single dwellings, two have a partition which separates the kitchen from the living room. One family sleeps in the kitchen; the other, in the living room. The remaining three houses have kitchen and sleeping quarters divided by a partition; either serves as a living room, where the family congregates and where guests are received.

When there are two separate buildings per household, one invariably is the kitchen and the other, the living room. Some (8 families) sleep in the living room; some (7) in the kitchen; and the rest (3) sleep both in living room and kitchen.

There are seven households whose domestic activities are spread over three separate buildings. As usual, one building is the living room, another is the cook house (5 families sleep in the former; 1, in both living room and kitchen; 1, in neither). The third building is utilized as follows:

| | Number of families |
|---|---|
| Unoccupied | 1 |
| Bakery | 1 |
| Originally built as a shelter for swine; now rented to another Totonac family as a dwelling | 1 |
| Bedroom exclusively | 3 |
| Originally a granary; now a single, all-purpose dwelling, occupied by a recently married son | 1 |
| | 7 |

The household with four buildings has them divided thus: living room; kitchen; and two separate houses, each of which is a bedroom. The family is numerous. The daughters sleep on woven mats spread at night on the living-room floor; the head of the family and his wife sleep in a separate bedroom house, which also serves as a granary; the sons, in another, which at times likewise is used as a supplementary granary.

## THE NATIVE HOUSE

In Spanish, the native house is called *casa de palma* (palm house); in Totonac, any house with thatched roof is known as akštáqa?

The house is either square or rectangular, usually the latter, with gabled roof. The gable end is not vertical, but inclines slightly, thus forming a short shed at either end of the structure (pl. 9, *a*). In rare cases, not all the area covered by the roof is walled, and the unwalled extension serves as a porch. Often, a lean-to is attached to the house (pl. 9, *e*), but, basically, the latter is rectangular, with four sheds.

House dimensions generally are reckoned by *varas* (yards) rather than by meters. With all the materials at hand, it is said that two men are able to erect a house 3 by 6 *varas* in the course of 2 full days. As a matter of fact, much of the work of building a house can be handled by one man—except for raising the beams and the scissorlike poles which support the ridge. It is far handier, however, to have at least two men work on a house, and generally a house builder invites numerous friends to assist. Some are paid in cash, by the day; others come with the understanding that their day of labor will be repaid in kind, at some future date. All workers are given at least their noon meal by the host.

## MATERIALS

Materials are gathered well in advance. Months ahead of time, a prospective house builder shops for suitable house posts—either used posts from an abandoned house, or trees which can be converted into new posts. He selects hardwoods,[10] which will resist rot and borers; beams generally are of the same durable woods. In addition, a builder must have an adequate supply of somewhat lighter, but durable poles for the roof frame,[11] and a great quantity of withes and liana.[12] Moreover, he must assemble thatch (pp. 181–183) for the roof and either bamboo or upright poles[13] for the walls.

Few people can draw exclusively on their own lands for all the necessary materials, and some of the basic supplies usually are acquired through a series of small-scale commercial transactions. In any case, materials must be cut and hauled to the house site, and a considerable amount of preliminary labor and planning are involved.

## FRAME

When the actual building starts, a light stick is cut a *vara* in length, to serve as a measure. With the metal *coa*, excavations are made, generally 3 *varas* apart, and about 1 in depth, to receive the

[10] Posts generally are of *cedro, zapote chico, moral, copalillo, chijol, escolín,* or *alzaprima* (Nos. 219, 191, 324, 205, 176, 338, 206, respectively). In moist soils, *zapote chico* is said to last better than do other woods, provided it is cut and set green; however, "in sandy soil, it rots at once." *Chijol* is the most enduring of all woods and lasts close to 50 years; *zapote chico* and *moral* have an expectable life of 35 to 40 years. In view of this longevity, no Totonac spurns such timbers second-hand, and the same posts may be used by the second, and even the third generation of builders. A further wood, *quince* (no specimen), also is suitable. "It does not grow tall, and only one post comes from a tree." In addition to the above-mentioned woods, house beams sometimes are of *palo de rosa, caoba, tabaquillo,* and *guasimilla* (Nos. 171, 194, 241, 337).

[11] Many local woods are used for roof poles: *pata de vaca, capulín, cojón de gato, zapote chico, frijolillo, caoba, copalillo, guayabillo, tabaquillo, palo de lodo, huesillo,* and *guasimilla* (Nos. 69, 85, 138, 191, 193, 194, 205, 208, 241, 287, 330, 337). In addition, a species of *Prunus* (No. 322) and a tree called *guacimín* (no specimen) are acceptable.

[12] Withes are laid horizontally on the roof frame and to them the thatch is lashed. Withes generally are of two kinds of *capulín* (Nos. 21, 85); *chililló* (No. 112); an *Abutilon* and a species of *Guatteria* (Nos. 17, 321).

The preferred liana for house lashings is *bejuco real* (No. 133); sometimes *bejuco colorado* (No. 131) is substituted, at least, for tying roof poles, thatch, and the uprights which form the walls.

[13] Formerly, *zapote chico* saplings were favored for house walls, but the supply is pretty well exhausted. Today, the following are most popular: *palo de volador, laurel, palo de lodo* (Nos. 28, 130, 287), and a species of *Podachaenium* (No. 188).

posts. The loosened earth is removed with the hands. The posts then are stood in the holes, about a third the length of each going below ground. Ordinarily, for the thatched house, neither posts nor beams is squared; sometimes, squared posts are combined with untrimmed beams.

Next, the two principal beams, known as the mother beams (*vigas madres;* fig. 19, *a–f*, No. 3) are set in notches which have been cut in the posts, and are lashed in place with liana. At each end of the house, a cross beam is tied on top of the mother beams (fig. 19, *a-d*, *f*, No. 4).

One of the men now climbs on top of the frame. With a stone tied to a string, he tests the posts, to be sure that they are vertical. They are shifted as necessary, following which earth and small stones are packed about the base; the fill is tamped with a substantial stick, whose butt has been smoothed. Immediately thereafter, the remaining cross beams (fig. 19, *a*, No. 4) are lashed to the mother beams, each a *vara* from its neighbor. (The length of any Totonac house is evident by counting the transverse beams exposed on the interior.) Once all the cross beams are in place, an additional longitudinal beam is placed in the center, on top of them; it runs the full length of the frame, parallel to the mother beams (fig. 19, *a*, No. 5).

The roof frame is added next. Four poles, of durable wood, but lighter weight than the beams, are notched near the butt to engage with the mother beams (fig. 19, *e*). Their tips are crossed and lashed together, with a small reinforcing stick (fig. 19, *d*, No. 10) on the under side of the juncture. Poles so tied have the form of a double, inverted V and, because they have considerable play, are known as scissors (*tijeras*). One set of scissors, each of four crossed poles, is prepared for each end of the house (fig. 19, *e*, No. 6). If the building is small, one more set for the middle suffices; if the house is long, several intermediate ones are necessary.

The scissors are tied on the ground and the inverted V stood against the end of the structure. Two men climb to the terminal cross beam, against which the scissors rest. They alone, or with the assistance of others, raise the inverted V, and shift the four poles until the notches engage with the mother beam. Next, they incline the scissors toward the center of the house, to form a somewhat sloping gable, or short shed. When the scissors are in place, the butts of the four component poles are lashed to the mother beams.

With the two end scissors and the one or more intermediate sets securely in place, the ridge pole is hoisted so that it comes to rest in the angle formed at the summit by the crossed poles (fig. 19, *d*, *e*, No. 7). Supplementary roof poles (fig. 19, *d*, No. 8) are laid between the scissors. They run from the ridge to the mother beam, their butts notched to engage with the latter. Light saplings, known as *cañaduras* (*sic*), are tied vertically across the gable end (fig. 19, *f*, No. 12).

The next step is to reinforce the roof frame. A pole, light in weight but rigid and durable, is lashed the full length of each long shed, on the inner side of the scissors and supplementary poles. Sometimes there are two such reinforcements (pl. 10, *d;* fig. 19, *d*, *e*, No. 9). Transverse struts (pl. 10, *f;* fig. 19, *e*) connect the opposing poles, but if there are two sets, ordinarily they connect only the upper ones. Undoubtedly, the struts add to the stability of the frame, but they are regarded chiefly as supports for a temporary floor on which the thatching material is later placed, as the roofing approaches the ridge.

A supplementary beam, which supports no weight, but which holds the butts of the scissors and other roof poles against the mother beam, is lashed on the outside of the latter (pl. 10, *e;* fig. 19, *d–f*, No. 11). A similar secondary beam is tied on the outside of each of the two terminal cross beams, on top of the vertical poles of the gable end (fig. 19, *f*, No. 11). These additions not only make the roof frame more stable, but they result in small-scale eaves on all sides of the house. Presumably for this reason, this secondary beam is called *carga-zacate* (carry grass).

The last step in preparing the roof frame is to add a series of horizontal, flexible withes (lokoyo, *huiles;* pls. 10, *e*, 11, *a*), to which the thatch is to be tied. Generally, three men climb to the top of one of the long sheds; one is stationed at either end, and the third, in the middle. To them, the withes are passed and, starting at the top, they tie them to the scissors and intervening roof poles. Long, loose ends extend outward at either side of

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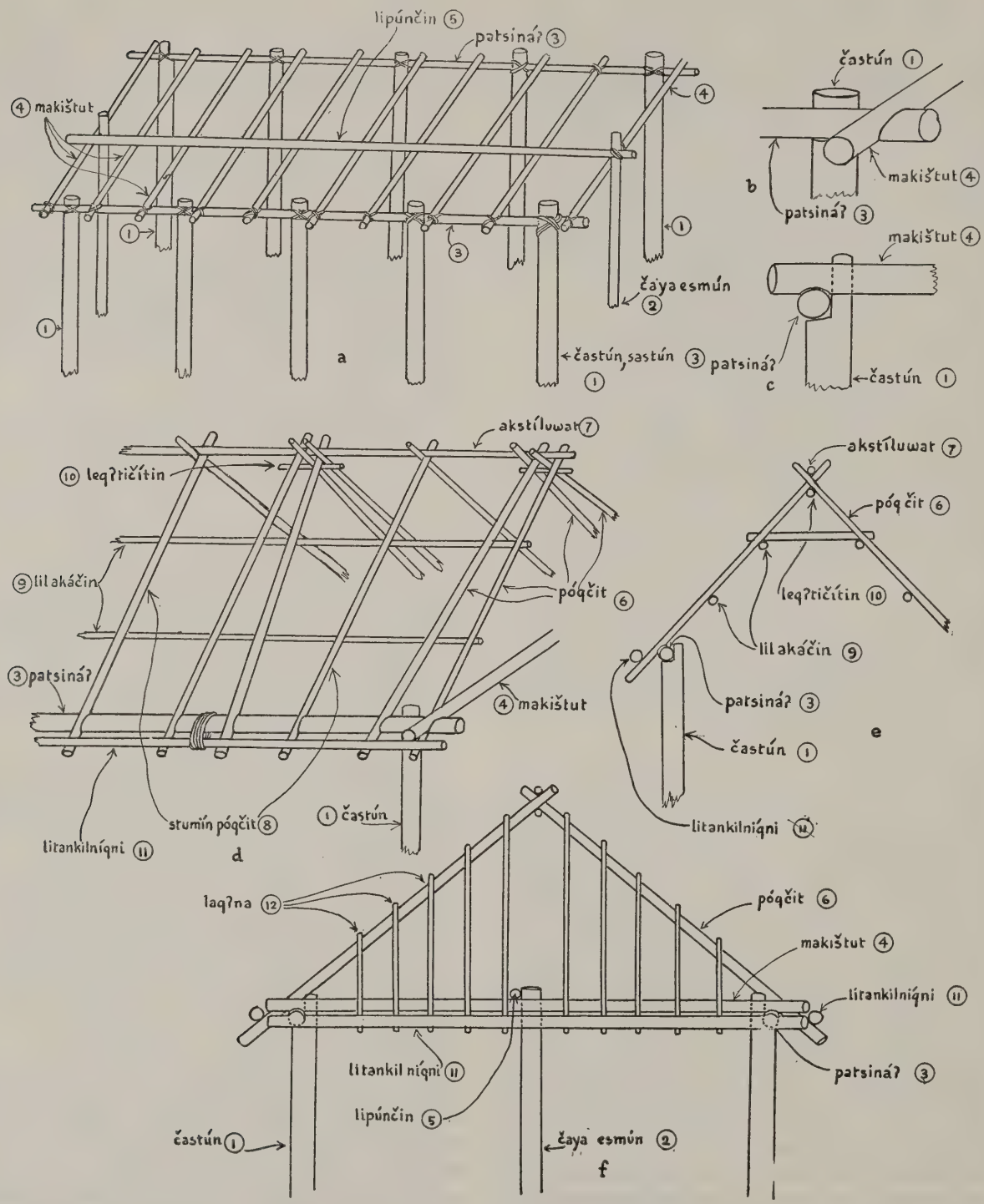


FIGURE 19.—Frame of native house. Component posts, beams, and poles are indicated by Totonac names and, to facilitate reference in the text, are numbered. *a*, Basic frame, of posts and beams; *b*, *c*, corner detail, showing relationship between post, mother beam, and terminal cross beam; *d*, roof frame; *e*, profile of roof frame; *f*, gable end in elevation. Adapted from a field sketch by Roberto Williams García.

the long shed (pl. 10, *e*); later, these are bent over the gable ends (pl. 11, *a*). The distance between the horizontal withes is approximately one *jeme* or one *cuarta*, roughly 20 cm.

### THATCH

The roof is thatched before the walls are added. A series of bamboos, poles, or planks is laid longitudinally cross the top of the cross beams. Along both sides of this platform the thatch is neatly piled, leaving the center clear. Unless the covering is of split *palma real*, the men are on the outside of the roof frame and, if necessary, can reach through it for material. Generally, additional workers stand in the clear space of the platform and pass thatch to the men on the outside.

Thatching starts with the lowest course. The men stand or squat, barefooted, on the supplementary beams which are lashed on the outside of the mother beams and of the two terminal cross beams. If there are several men, they station themselves equidistant from one another, along the lower edge of the roof.

Thatch is affixed to alternate withes. The lowest one is skipped, and the first course is tied to the withe next to the bottom. Intervening withes keep the covering from dropping inward and downward. Each man ties the lowest row from right to left; that is, work is clockwise. He continues until he reaches the work of the adjacent companion on his left. On the second course, progression is counterclockwise, "to make the roof waterproof."[14] After the first few courses are laid, the men stand on the withes. As the ridge is approached, the platform no longer is readily accessible, and a higher one is improvised, by resting poles or bamboos on the struts which run transversely from one long shed to the other.

The technique of thatching varies somewhat according to the material used:

*Palma redonda* (No. 259).—This palm provides the least expensive roofing and for that reason is popular. However, it seldom endures more than 2 or 3 years. Constant smoking helps to preserve the palm, hence this particular thatch is especially favored for kitchens. It is said that 2,500 leaves are necessary for a house 8 *varas* long; 4,000 are cut for a house 6 by 12 *varas*. At present, the price is between $0.75 and $1.00 peso a thousand, with the purchaser doing the cutting.

The palm is stacked in orderly fashion on the platform which rests on the cross beams, with the base of the leaves toward the center of the house. Down the middle of the platform are two planks, on which workers walk back and forth, as they hand the palm through the frame to the men on the outside.

We observed two methods of tying *palma redonda* (fig. 20, *a*, *b*). The leaves are laid double, one on top of the other. The basal segments are split on either side but are not removed, and with them the leaf is tied in place.

A different technique was applied to a small granary thatched with *palma redonda* (pl. 11, *g*). One man climbed to the roof frame with the aid of his bamboo ladder. He sat on the outside of the frame, bracing himself against the withes, and facing outward. He worked from bottom to top, from his left to his right. However, he did not complete one course before continuing to the next upper one. To tie the palm, he reached between his knees (pl. 11, *g*). An assistant on the ground handed him the necessary palm from time to time.

*Palma real* (No. 364).—In contrast to the preceding, this palm has long, slender leaves; it lasts 25 to 30 years as thatch; and the initial cost is proportionately high. One informant calculates 300 leaves to roof a house 8 *varas* long; another thinks a house 6 by 12 *varas* requires 1,000. The current price is $10.00 pesos a hundred, with the purchaser doing the cutting; one man asks $15.00 a hundred, for the right to cut on his land.

There are two principal methods of thatching with *palma real*. One is to cut the leaves in lengths of about a *vara*. The base of the petiole is laid vertically against the outer surface of the withe and is affixed to it with liana (fig. 20, *c*).

The other method involves splitting the leaves the full length of the midrib. The tip is opened between the fingers; "it opens easily; no knife or machete is used." Next, the split leaves are cut to uniform length, if possible to correspond to that of the long shed of the house; extra length is allowed for splicing, and short pieces left over are used for the gable ends.

Once cut, the split palm is stacked, in the same order in which it is to be applied to the roof. If the first half leaf has the base of the petiole toward the right, the second is placed upon it, with the base to the left. This alternation compensates for the difference in thickness of the petioles and makes it easier to lay the thatch in even, closely spaced, horizontal rows. Moreover, the segments of the upper half leaf run roughly at right angles to those of the lower (fig. 20, *e*), thus giving added protection against rain.

The gable ends, roughly triangular, are thatched first. A split leaf is placed against the lower poles (fig. 19, *f*, No. 12), with the segments downward. Then, with liana, the midrib is caught in place (fig. 20, *d*, *e*,). It is not attached to every pole, and figure 20, *f* indicates to which the various courses generally are affixed.

Work is not clockwise or counterclockwise, but upward.

[14] We observed this twice, but are not sure that it holds for all thatching. It may vary with material, with the type of structure, and with the number of men working. A small granary was roofed in much less organized fashion (see below).

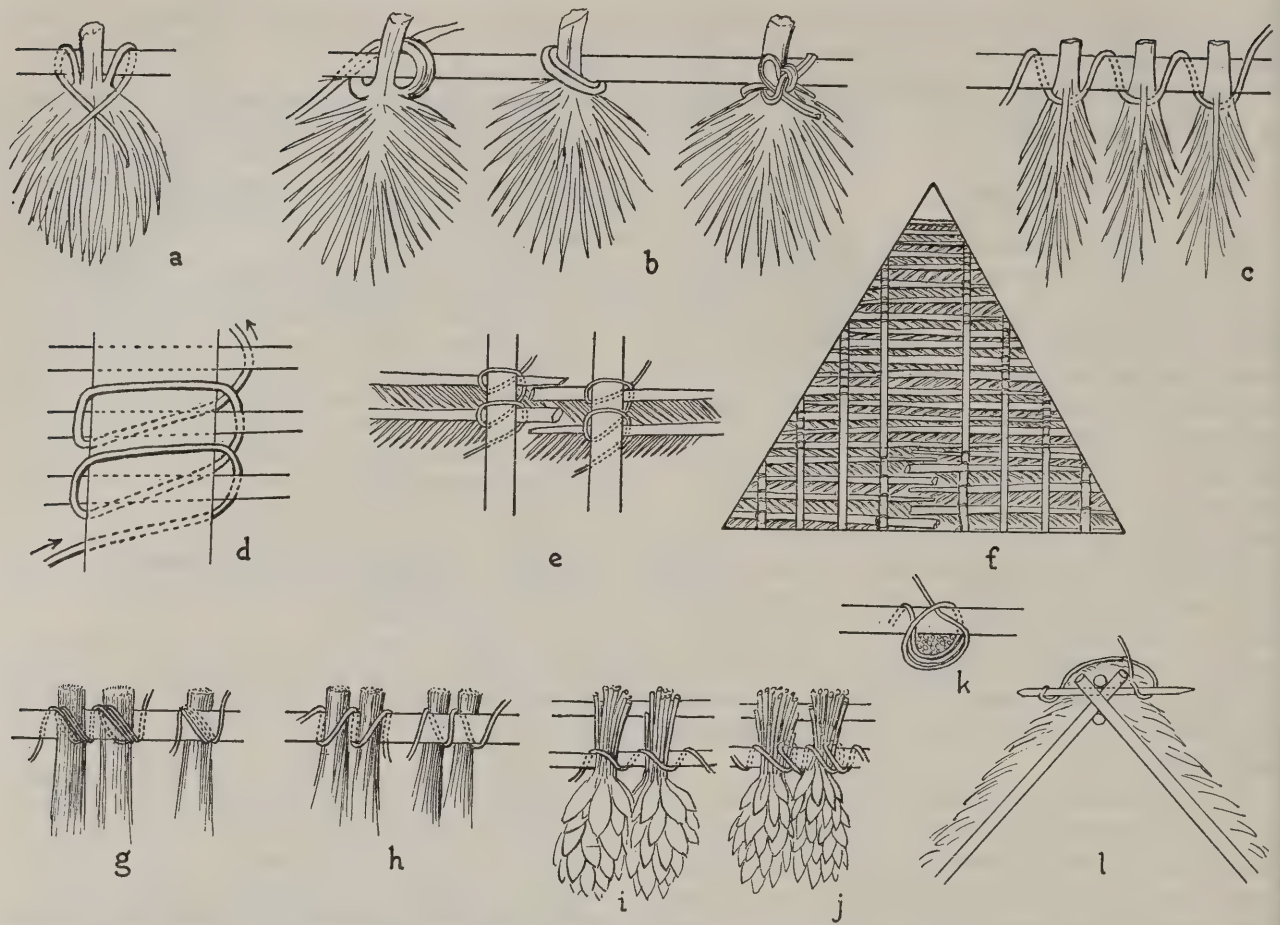


FIGURE 20.—Thatch. *a*, *b*, *Palma redonda*, entire leaf; *c*, *palma real*, cut to short lengths; *d–f*, *palma real*, split down midrib, to form half leaf; *g*, *h*, grass; *i–k*, laurel (*misanteca*); *l*, transverse stick by which thatch is secured at crest of roof.

*a*. At each side, basal segments are split, but are not removed; sometimes they are twisted slightly. The base is placed against the exterior of the roof withe; the split segments are passed upward and around the withe, then are brought to the outer surface and tied. On the interior (not shown), two strips (segments) of palm leaf cross the withe vertically.
*b*. Similarly, basal segments are separated, but are not removed. They cross diagonally on the underside of the withe, then are carried to the exterior and tied. The three sketches show the exterior at the start, followed by interior and exterior views, after the strips have been tied.
*c*. *Palma real* is cut in short lengths which are lashed with liana to the roof withe.
*d*. Detail of affixing split *palma real* with liana; for the sake of clarity, segments of the half leaves are not shown. The split leaf is applied directly to the roof poles, without the necessity of transverse withes; work direction is upward, not clockwise or counterclockwise, as in other types of thatch.
*e*. Splicing split *palma real*; lashing as shown on larger scale in *d*. Note that base engages with tip and that the axis of the segments of the half leaves alternates.
*f*. The gable end, or short shed, of the roof, showing the poles to which split *palma real* leaves are lashed. At the lower and wider part of the shed, the half leaves are spliced, as indicated in *e*. Above, as the gable narrows, a single half leaf is sufficiently long, and no splicing is required. Note that each course of thatch is not affixed to every roof pole.
*g*, *h*. Two methods of affixing grass thatch with liana; exterior and interior views shown for each.
*i*, *j*. Two methods of applying *misanteca* thatch with liana; both are exterior views.
*k*. Method of securing liana, with *misanteca* thatch, when a new length is required; view from above.
*l*. Short, pointed sticks thrust transversely through thatch at the crest of the roof. Liana is looped over these, in figure-8 fashion, to secure the thatch at the crest.

As each split leaf is tied in place, the worker forces it downward with his feet, against the preceding course.

Next, the long sheds are thatched. For a house of considerable size, three or four men work simultaneously, on the inner side of the roof. Again, the split palm is not tied to all the roof poles; each worker lashes the part in front of him to the pole immediately to his right and to his left. Accordingly, if there are three men working, each half leaf is tied to six of the roof poles. Work proceeds as before. If a midrib is particularly thick, it is notched with the machete, so that the liana will clutch it firmly. Splicing is done precisely and with great care (fig. 20, *e*).

We are uncertain how the junctions of the four sheds are made waterproof. Unfortunately we had no opportunity of witnessing this type of thatch in construction, and the account above is based on description, as well as on observation of completed roofs.

From the interior, the finished roof of split *palma real* has a pleasing aspect. One sees principally the narrow, closely spaced, split midribs. The Totonac are perfectly aware of its esthetic appeal and it is said that split palm is favored because the inside roof is "handsome."

It is worth pointing out several aspects in which the technique of applying split palm varies from the more

usual thatching method: (*a*) no withes are required; (*b*) the palm is tied directly to the roof poles; (*c*) the axis of the leaf is horizontal, not vertical; (*d*) work direction is upward, not clockwise or counterclockwise; (*e*) men work on the inside of the roof frame, not on the outside; (*f*) careful splicing is involved; (*g*) gable ends are thatched prior to the long sheds.

*Grass.*—Two kinds of grass, *zacate colorado* and *zacate guinea* (Nos. 275, 245) often are used as thatch; the former is the more durable. Both are handled the same way, and it is said that the dry leaf of sugarcane may be similarly treated. We have observed no roof of cane leaves and believe its use to be infrequent.

Grass generally is tied in small bunches (pl. 11, *b*), so that it may be handled more easily. A small bundle is arranged, with the roots together, and the lot is wrapped, near the root, with a length of the same grass. Sometimes, however, grass thatch is applied without being prepared previously in bunches.

As usual—except when split *palma real* is involved—the workmen are on the exterior of the roof frame and tie thatch to every alternate withe. Two lashings are shown in figure 20, *g*, *h*. Basically, they are similar. One, however, has a double diagonal wrapping; and it appears that one sketch represents a section made when the work was proceeding clockwise; the other, counterclockwise.

*Misanteca* (*No. 169*).—This is a laurel which, as roofing, lasts about as long as does *palma real*. It is generally said that the leaf roof is "very fresh," that is, cool in hot weather. However, this thatch is little used today because the tree has become scarce; moreover, "not everyone knows how to make a *misanteca* roof that will not leak."

The cost is considerably less than that of *palma real*. In one case, a parcel owner, for the sum of $15.00 pesos, permitted the cutting of sufficient *misanteca* to roof a house 10 *varas* long. (However, the purchaser confided in us that he had basely represented the house as of 9 instead of 10 *varas*.) Preliminaries were somewhat protracted: 5 man-days were spent in cutting the necessary sprays, plus 2 more in hauling the material to the house site.

As the sprays are cut, they are piled on the ground carefully, with all the stems heading the same way, and with the rough undersurface of the leaves downward. Something heavy, such as odd house beams, is laid on top of the piles, as a press. *Misanteca* must be used within several days after it has been cut, or the leaves shed.

The pressed sprays are collected in large bundles and are trundled to the house on the back, with the aid of a head tump. They are laid on the floor of the house and, as needed, are hoisted to the temporary platform laid across the beams. Great care is taken that the piles be neatly arranged, with all the stems in the same direction and, this time, with the shiny surface of the leaf downward.

As usual, the men who thatch are stationed on the outside of the roof frame (pl. 11, *d*, *f*). One remains inside, on the platform on top of the beams, to pass the material to his companions. He hands the several sprays, stems first, between the poles and withes of the frame. *Misanteca* is not tied in individual bunches as is grass; two to eight individual sprays are applied at a time, according to the thickness of the stem. As usual, *misanteca* is affixed to every alternate withe, with liana.

The thatcher clutches the several sprays in his right hand, the liana in his left. He places the sheaf against the outside of the withe, with the shiny surface of the leaves downward; otherwise the leaves shed. He secures the bundle with liana (fig. 20, *i*, *j*), pulls the latter taut, and catches it temporarily between the stems of the sheaf, so that it will not loosen before the next lot is forthcoming. At the time we watched thatching with *misanteca*, the men were working counterclockwise; we neglected to ask if direction changed with succeeding courses of thatch.

Inspection of a finished house gives little indication how the problem of thatching the ridge is handled. Unfortunately, we did not have opportunity to witness this particular stage of construction. It is said that "years ago, many houses were thatched with grass." Extra layers were added at the ridge and each was braided with the preceding course. As many as 12 or 15 layers were added, and the completed roof "had braids each side of the ridge." This form of braiding is called takstitkonší?a. It no longer is current in Tajín but presumably resembles the ridge treatment still to be seen in parts of the old Huasteca.

About all we can say concerning roof finish is that the thatch is applied heavily along the crest, following which several short, sharpened poles are thrust through transversely, at spaced intervals, just beneath the ridge (fig. 20, *l*). Liana is looped over these sticks, from one shed to another, to hold the top thatch in place.[15] This finish now is applied to all thatched roofs, including those of grass, but was not required for the older braided grass crest.

### WALLS

The wall (*cerca*, fence) of the native house consists of contiguous uprights of bamboo or saplings. The former is preferred because the stalks are relatively straight, whereas the latter often are crooked and difficult to aline. Occasionally, a wall is made of split rails.

The local supply of bamboo (*tarro*, No. 180) is rapidly diminishing. There still are some handsome stands in Tajín, but families near the *fundo legal*, who need bamboo in quantity, seem to buy chiefly in adjacent Tlahuanapa. The cane is cut

[15] Near Tamazunchale, S. L. P., we noted one roof similarly treated. There, however, it is more common to use a grass thatch which is braided at the crest. It also is common to invert heavy forked sticks over the ridge to hold the thatch in place.

in November or December, at the time of the new moon, "so that it will endure; if cut in summer, it soon becomes infested with borers."[16] It is hacked off about a meter from the base; if cut too close to the root, the plant does not sprout anew.

With a machete, the stalk is chopped into three or four uniform lengths, which correspond to the height of the wall—generally, about 3 m. Formerly, these were used unsplit (*tarro rollizo*). In recent years, as a matter of economy, the canes are divided longitudinally in half, so that six to eight uprights come from a single bamboo stalk. The length to be split is laid on a wooden block and held in place with one foot. With the left hand, the machete is held firmly against the cane where it is to be opened; with a stick in the right hand, the machete is pounded until the bamboo is halved. Split bamboo (*tarro rajado*) invariably is applied with the smooth, convex surface toward the interior of the house, the split surface on the exterior (pls. 9, *d*, 11, *e*).

The current price of bamboo is about $0.15 pesos the stalk, from which six to eight split uprights are obtained. Eight to eleven of the latter are required for each *vara* of house wall. Accordingly, a house 6 by 12 *varas* takes between 300 and 400 split bamboos, derived from approximately 40 to 70 entire stalks. Below (table 12), one informant calculates 60 stalks for a house this size. We may say, roughly, that the cost of the *tarro* ranges from $5.50 to $10.50 pesos, according to the number of lengths obtained from a stalk.

Precisely the same method is used in applying either bamboo or saplings to the house frame. A couple of light, transverse poles are lashed to the exterior of the house posts—one about a meter above the ground, the other, ca. 2 meters. Ordinarily, these are horizontal, but occasionally they run at an angle (pl. 9, *b*). Sometimes there is but one transverse pole, in which case the butts of the wall uprights are stood in a shallow trench and covered with earth. This system is not favored, for the poles rot with greater rapidity. Prudent builders lay a beam of resistant wood or a row of flat stones on the ground, on which the butts of the uprights rest; in this case, two transverse supporting poles are indispensable. So laid, the life of a bamboo wall is about 20 years.

[16] Cf. p. 72. In Zapotecan Yalálag, wood and cane formerly were cut at the time of the full moon, in the belief that they would last longer (De la Fuente, p. 40).

One by one, the uprights are stood against the inner side of the transverse poles and are lashed to them with liana. If there are two poles, the uprights are fastened first to the upper one; a man stands on a ladder inside the house, while an aide hands him the uprights and assists him in placing them.

The lashing would be called wrapped twine (fig. 21, *a*) if the product were a basket rather than a house; sometimes the wrapping is double fig. 21, *b*). We have watched one man work alone

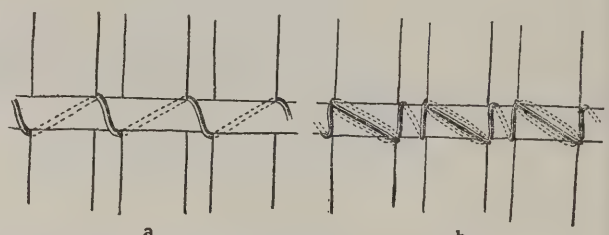


FIGURE 21.—Lashing of house wall uprights; *a*, single lashing holds the uprights to the transverse pole; *b*, double lashing. Both exterior views of wall.

on a wall; he stands on the inside of the house and places the uprights in order, from right to left (counterclockwise), affixing each to the cross pole before he adds the next. However, at least two other men work in clockwise direction. If help is available, it is handy to have three men work on a wall. One brings the uprights from a great stack in the yard, selecting carefully, to compensate for the unevenness of saplings, or the joints of bamboo. A second man stands on a ladder, inside the house, while a third is on the ground, outside. As the wrapping progresses, the liana is passed back and forth between the uprights, from the worker inside, to the one on the outside.

It is considered unwise to affix all the uprights to the lower pole. Because of the local penchant for homicide, they usually are left free, as an emergency exit, at one spot or another along the perimeter.

Sometimes the wall of uprights is coated with mud plaster (pl. 12, *c*). The light-colored subsoil, which has a heavy lime content, is dug from a handy spot, such as one in the *fundo*, on which all the neighbors draw. It is hauled to the house in sacks or in wooden trays and dumped in a heap, in the top of which a hollow is formed. Water

is poured into the depression and the paste is well mixed, usually with the feet.

Chopped grass is added. *Zacate colorado*—perhaps a few odd sheaves salvaged from an old roof—is placed on a block of wood and with the machete is hacked into short lengths before it is combined with the mud. When the "plaster" is of the proper consistency, the uprights are moistened, and the mixture is thrown against them with the hands. Work usually starts at the bottom of the wall. Owing to the light color of the subsoil, the resulting surface is a yellow cream; when well smoothed, the effect is very pleasing.

Some builders plaster all walls of the house, as well as interior partitions, despite the fact that this so restricts ventilation that the house is most uncomfortable during warm weather. Some plaster only the north wall, "where the cold enters." Some plaster both surfaces of the wall; others, only the interior.

### DOORS

The Totonac house is windowless but is equipped with one or more doors. Seldom is a door on the end of the house; usually, it is on one of the long sides, adjacent to a main post. Ordinarily, posts are 3 *varas* apart, and, to complete the doorway, a secondary post is set in the ground, at no great depth, and is tied above to the mother beam.

The door is of bamboo splints, mounted in a bamboo frame. Unsplit bamboos form the uprights at either side. At the bottom, and sometimes at the top, the frame is finished by a half bamboo, in whose concavity are set the splints of the door (pl. 12, *a-c;* fig. 22). Transverse poles, to which the bamboo splints are lashed, may be on the interior (pl. 12, *b*, *c*), or the exterior (pl. 12, *a*) of the door; in either case, the convex surface of the splint is on the outside of the door.

The "hinge" is constructed ingeniously. One upright of the door frame fits in the concavity of a bamboo of a slightly greater diameter, which is lashed firmly to one of the posts of the doorway. The bottom of the same upright rests in a pitted stone or block of hard wood, set in the ground. With this simple equipment, the door swings freely. Sometimes—presumably to prevent warping and sagging—a few lengths of liana are looped, diagonally across the back of the door, in the form of a figure 8 (pl. 12, *c*).

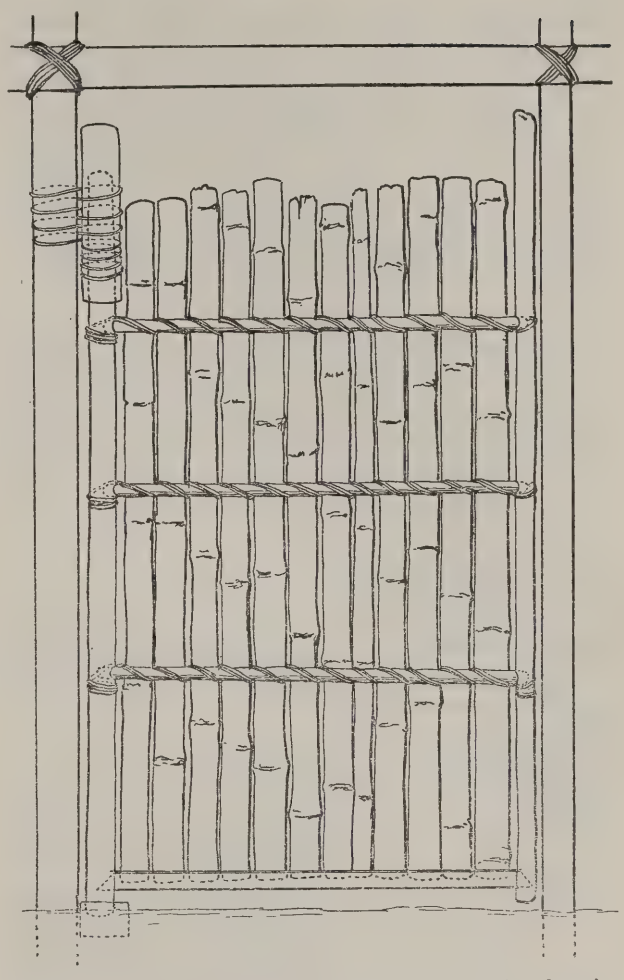

FIGURE 22.—Bamboo door. See text (p. 185) for description.

### COST

If a man happens to own a considerable patch of *monte alto*, he obtains from it all the materials needed to build the native house. However, *monte alto* now is relatively scarce, and most families supplement resources from their own lands with purchased materials.

In table 12, one informant has estimated the cost of building materials for a house 6 by 12 *varas;* corrections and remarks are appended. With the possible exception of roof poles, the purchaser cuts and transports all materials, and labor is not included in the calculations.

The table shows a total of $325 pesos, which evidently is subject to considerable correction. To it must be added $14.00 for two posts and $8.00 for

bamboo, both overlooked by the original informant. Moreover, there is difference of opinion with respect to roof withes, and a second informant calculates them at about $55 pesos more than the table shows. If we add these items to the total of $325, the house would cost close to $400 pesos. However, the investment may be reduced $100 pesos by the simple expedient of substituting the less desirable *palma redonda* thatch for *palma real.*

In other words, the minimum cost for a house this size, exclusive of labor, is close to $300 pesos. If *palma real* is used for roofing, the price soars $100 pesos, while *misanteca* thatch is intermediate.

TABLE 12.—*Cost of building materials* [1]

| Materials | Cost in pesos | Corrections | Remarks |
|---|---|---|---|
| 10 posts @ $7.00. | $70.00 | $84.00 | Error in calculation; a house 6×12 *varas* requires 12 posts. Those of *chijol* ca. $1.50 a *vara;* other woods somewhat cheaper. |
| 2 mother beams @ $10.00. | 20.00 | -------- | |
| 13 cross beams @ $5.00. | 65.00 | -------- | Beams usually $1.00 a *vara.* |
| 32 roof poles @ $10.00 a dozen. | 30.00 | -------- | Roof poles 4–5 *varas* long; another informant calculates cost at $6.00 a dozen, or $9.00 delivered. |
| 100 roof withes | 30.00 | 85.00 | Major disagreement; another informant claims they cost $10.00 a dozen; are sold in uneven lengths. |
| 1,000 leaves *palma real.* | 100.00 | -------- | Apparently the usual price; one man asks 15.00 a hundred. If *palma redonda* used, 4,000 leaves @ $1.00 the thousand; total cost $4.00 instead of $100.00. *Misanteca* leaf intermediate in price. Is purchased as a lot, or by *tercio,* in this case, the latter being the quantity one can grasp in his two arms. |
| 2 *tercios* (50 lianas each) of liana @ $5.00. | 10.00 | -------- | |
| 60 bamboo stalks. | -------- | 8.00 | Overlooked by informant; cost varies from $5.50 to $10.50, dependent upon length. If saplings used, price $10.00 to $15.00 a hundred. |
| Total--- | $325.00 | -------- | |

[1] Calculated by one informant for a house 6×12 *varas.* Corrections and most remarks based on data from other informants.

A house often is built on rented land. When the owner moves, he dismantles the domicile and takes with him any materials—such as posts and beams—which may be used anew. Sometimes a house is sold. Rutilio Olmos was asked $150 for a down-at-the-heel building, which he finally bought for $60 pesos; according to him, only the posts were in good condition. We ourselves purchased a smaller house, likewise in poor condition, for $30 pesos. This was considered a great bargain by the neighbors.

### SUGGESTED IMPROVEMENTS

The native house has much to commend it. Above all, it is inexpensive and is constructed entirely with local materials and with local labor. Ventilation is good. Lighting is far below our standards but probably is adequate for Totonac needs. On the whole, the Totonac do little close work and none of it by night. Weaving, sewing, and general manufacture and repair of equipment usually are performed by day, often in the doorway of the dwelling. Few people read; none, as far as we know, with any regularity. Postal service is virtually nil; newspapers seldom find their way to the community; and books are few and far between. In short, Totonac lighting requirements are not the same as ours.

Obviously, the native house has a number of major disadvantages, but it would be unrealistic to suggest drastic change, for, given the current economy, the Totonac are forced automatically to make shift, as best they can, with the materials at hand. However, a few modest suggestions might be noted.

After having lived 8 months in a local dwelling, we feel that probably its greatest drawback is the earth floor. During the rainy months, this is slightly humid, and throughout the year, it manifestly is unhygenic. In our opinion, the Totonac are not good housekeepers, despite the fact that they are remarkably clean personally. It seems probable that local housekeeping would improve immeasurably if some sort of hard-surfaced floor, easily cleaned, could be installed. A stone pavement is out of the question, for stones are scarce. Concrete might be an excellent solution—but it is impractical because of the difficulty of transporting such heavy material from Papantla and because no Totonac knows how to mix or pour cement. If some sort of hard-surfaced stucco could be prepared on the basis of the calcareous subsoil, that might be a solution which would be accepted with alacrity.

The Totonac are not averse to changes in building materials. As will be seen below (pp. 187–189), there is a considerable inclination to substitute tile for the more common thatched roof, despite the fact that a relatively heavy capital investment is involved. The tile is purchased in nearby El Chote and hauled to Tajín; and, owing to its weight, it requires a much heavier house

frame than does a thatched roof. However, tile is more lasting than is thatch, is somewhat cleaner, and has, moreover, a certain prestige value. It seems probable that, as economic means permit, it will find increasing favor in Tajín.

In many homes, considerable discomfort results directly from the fact that domestic animals have the run of the house. Many dwellings are infested with chicken lice; and any house with pigs underfoot is likely to be generously supplied with *niguas*, which penetrate the bare feet and cause major discomfort. If the practice of using a bamboo gate on doorways were encouraged, these animal pests might be reduced considerably. Such gates are common in small towns and could be manufactured easily by the Totonac, with materials at hand.

As will be seen below, nearly half the families in Tajín sleep on woven mats spread directly on the earth floor. Some, however, use a simple platform bed, described in the succeeding section. Were the use of such beds encouraged, sleeping accommodations would be somewhat more hygienic.

In view of local conditions, any approximation to plumbing is out of the question. The outhouse is so rare in Tajín that it may be considered nonexistent. But if a sanitary, easily constructed, privy could be devised, its advantages would be obvious. However, it must be borne in mind that the surface soil is shallow and that the subsoil is hard, calcareous, and not easily penetrated with the excavating equipment found in the average house. In short, an outhouse based on deep perforation probably would not be practical.

Undoubtedly, a housing expert would recommend other and more far-reaching improvements. But to be effective, any suggested change must fit the local scene, must be based on local materials, and must fall within the capacity of local, unskilled labor. Our building materials—cement, steel, brick, and glass—are far beyond the reach of Tajín today, both literally and economically; and we must think essentially in terms of local resources.

### DISTRIBUTION

We do not know how widespread is the specific type of native house found at Tajín. In framing, there are slight differences between it and a Totonac house in nearby Tulapilla.[17] The latter frame has several roof poles which do not extend from the mother beam to the ridge, but which go only part way up. Moreover, the poles of the gable end are not parallel, but radiate from the ridge.

There are noticeable differences between Tajín and an area even as close as Poza Rica and María Andrea. In the former town, the city dwellers form house walls of bamboos placed horizontally, not vertically. And on houses observed along the main road, from María Andrea to Gutiérrez Zamora, the thatch of the two long sheds of the roof overhangs at each side, so that the gable ends appear to be inset. These, and many other variations of the same basic house are only to be expected.

Of course, there are obvious resemblances between houses in the whole area from the Huasteca to the Maya, but without a detailed comparative study, it is impossible to know how fundamental are the resemblances and the differences. It may be noted that despite the excellent and detailed description of Mayan houses by Wauchope, we do not find in his monograph a precise counterpart of the typical Tajín house.

It seems likely that for any large-scale comparative study, house construction would have to be broken down into dozens, perhaps hundreds, of individual elements. But if we knew the distribution of these elements and their combination in certain areas, the results should be important historically. The strength of the apsidal house in Yucatán (Wauchope, fig. 7) and its occasional reappearance far to the north, in the Huasteca, probably are not a matter of chance.

### VARIANTS

The native house still is the most popular, but a number of architectural innovations are noticeable. Quite often, the frame is made of squared timbers and supports a tiled roof (čí·ki, tile house). The walls of such a structure may be of bamboo (pl. 9, *d*) or of wooden planks (makatÁqʌʔ; maka, plank; tʌqʌʔ, fence) (pl. 9, *f*).

Needless to say, these variants are considerably more pretentious, although one man remarks that

[17] To judge from the photograph of a house in construction, kindly supplied by Gordon Ekholm.

"even a palm house may be well made, if the joints of the bamboo are trimmed and nicely fitted." He is building his own house with a frame of squared timbers, a tiled roof, and bamboo walls; later, he hopes to replace the latter with planks. Another friend comments that "an elegant house is of little use if it is disorderly." [18]

We paid relatively less attention to houses with tiled roofs; unfortunately there was no opportunity to witness construction of such a building. Apparently there are two principal ways of assembling the frame of squared timbers. One, considered the more ancient, has the disadvantage of leaving a sizable gap between the mother beam and the string piece (fig. 23, *a–d*), through which a thief may squirm when the house is left untended. As a consequence, the more popular construction at present involves notching posts and beams so that the string piece is alined above the mother beam, thus eliminating the unwanted opening (fig. 23, *e–i*).

The tiled roof is of two or four sheds (pl. 9, *f*); occasionally, an extension of one forms a corridor or porch (pl. 9, *c*); and, not infrequently, a lean-to is added. Plate 11, *e*, gives some idea of the roof construction in a dwelling of four sheds. Tiles are not available locally, but are purchased in El Chote, near Papantla. The terminal row along the gable edge, as well as that which caps the ridge (fig. 24, *c*, *d*) generally are set in "mortar" made from subsoil.

Often a house with a squared timber frame has plank doors which swing on metal hinges purchased in Papantla. In some cases, the walls are not of bamboo or saplings, but of wooden planks, laid vertically and nailed to the frame. Irrespective of roof and walls, most houses have dirt floors, surfaced with calcareous subsoil; but we have seen three tiled-roof houses with floors of square, terracotta tile.

We have no estimate of the cost of building a house with tiled roof. A 40-year old house, 12

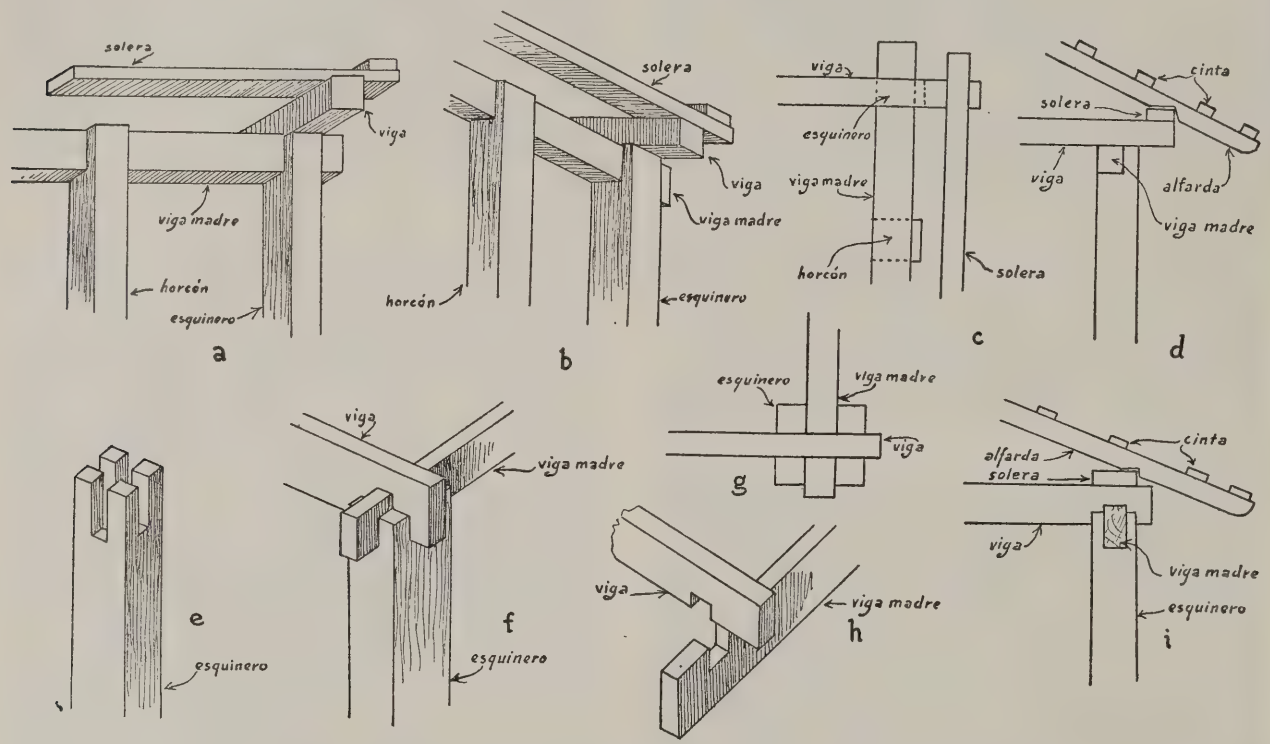


FIGURE 23.—Timber frame for house with tiled roof. Adapted from a field sketch by José Luis Lorenzo. Spanish terms are indicated. *a–d*, "Old style," which leaves an opening between the mother beam (*viga madre*) and the string piece (*solera*). Figure 24 gives elevations of such a house. *e–i*, "New style," with the above-mentioned gap eliminated.

[18] It is noted elsewhere that the Totonac are not tidy housekeepers. The wise remark above comes from one of the very few individuals whose domicile is neat. He claims to have learned an appreciation of order years ago, from a local school teacher.

*varas* long, with good posts, beams, and tiles, was offered for sale at $900 pesos (the land on which it stood was not included). There were no takers, and the price was reduced to $600 pesos. At this point there was a tentative nibble, but a member of the family, who allegedly had a claim on the structure through inheritance, brought pressure to bear, and the house was withdrawn from the market.

Ordinarily, a professional sawyer is required to prepare the timbers, although some builders inexpertly trim the posts with an ax. In addition to his food, a sawyer charges by the piece or by the dozen for his labor. In one case, the price was $45 pesos a dozen for beams, $6 pesos for roof *cintas* (fig. 23, *d*, *i*), $21 pesos for planks. Price varies somewhat according to the wood; *alza-prima*, for example, is more difficult to work than is cedar, and the charge consequently is higher.

Irrespective of the type of structure, today, at least, there are no ceremonial observances associated with house building. It is said that formerly a silver coin of one peso was dropped into the excavation at each corner, before the post was set in place.

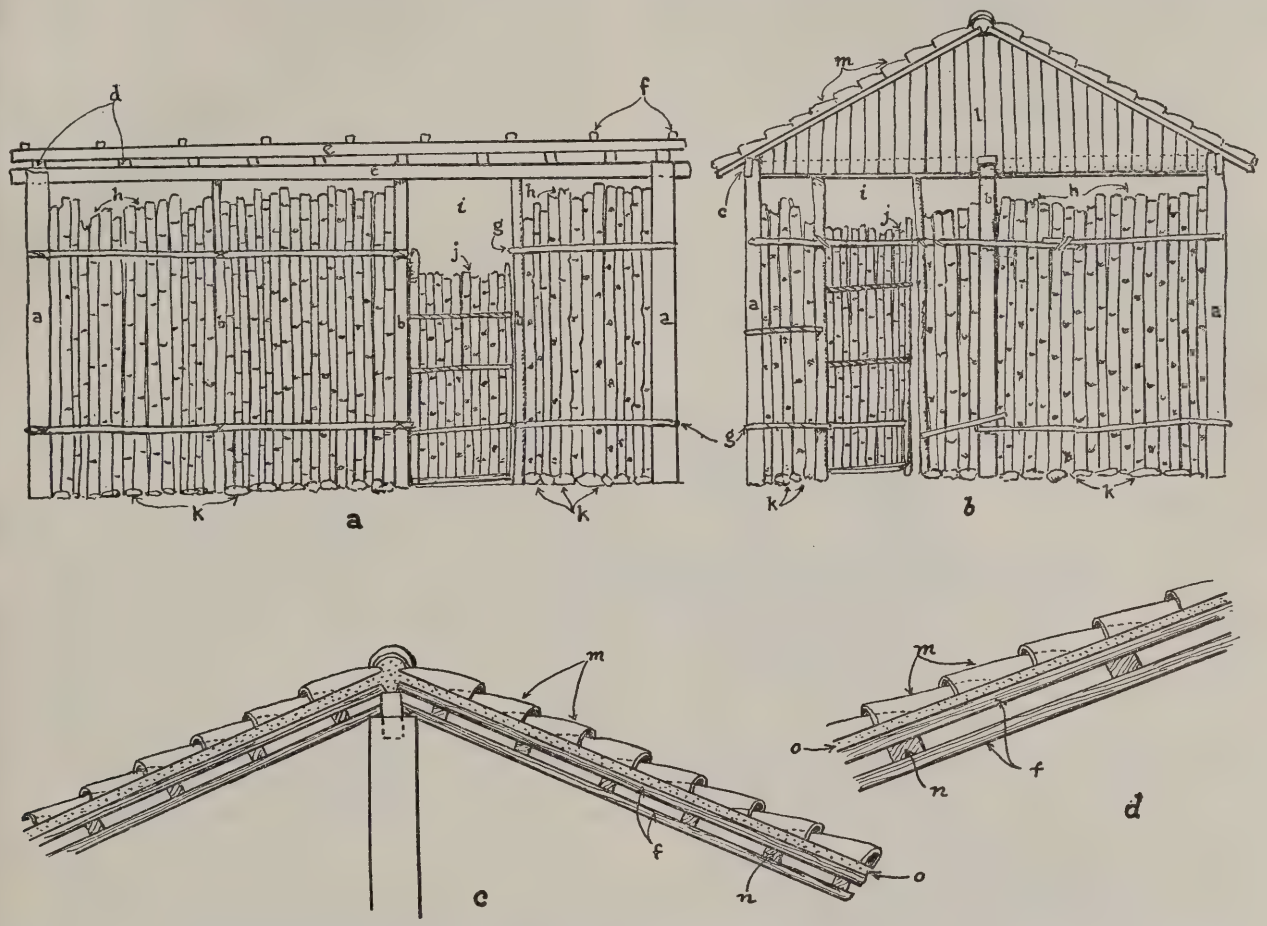


FIGURE 24.—House with tiled roof, bamboo walls. Framing details of similar house shown in figure 23, *a–d*. Adapted from a field sketch by Angel Palerm.

***a***, Elevation, side wall, north-south. *a*, Corner posts, squared (*esquinero*, fig. 23, *a–c*), set in ground. *b*, Supplementary posts (*horcón*, fig. 23, *a–c*). *c*, Mother beam (*viga madre*, fig. 23, *a–d*), resting in clefts cut in upper surface of *a*. *d*, Beams (*viga*, fig. 23, *a–d*), laid transversely on *c*. *e*, Timber (*solera*, fig. 23, *a–d*), laid across *d*. *f*, Roof timbers (*alfarda*, fig. 23, *d*), resting on *e*. *g*, Light poles, tied with liana to house posts. *h*, Split bamboo, lashed to *g*, to form house walls. *i*, Open space above door; in some houses covered with poles, bamboo, or planks. *j*, Door of split bamboo. *k*, Stones on which wall bamboos rest.
***b***, Elevation, gable end, east-west. See preceding key. *l*, Light planks, used to cover triangular area formed by gable. *m*, Tiles.
***c***, ***d***, Details of roofing. *n*, Transverse roof timbers (*cinta*, fig. 23, *d*). *o*, Layer of mud plaster.

## UPKEEP

A house with a tiled roof requires relatively little repair, although if it has bamboo walls, they must be replaced every twenty-odd years. Occa-

sionally, a house post needs replacing. The immediately adjacent wall is removed and an excavation made at the base of the post. In the one case observed, that of a side post, no effort was made to provide a temporary support for the beam. The excavation was opened sufficiently for the post to be lifted out. Then the hole was deepened and the bottom tamped with heavy sticks. Next, the distance from the base of the pit to the beam was measured and the new post cut to size. It was set in place and pounded to engage properly with the beam. Without further ado, the pit was filled and the wall replaced.

Mice and insects make inroads in thatch, and, from time to time, parts of the roofing are replaced (pl. 12, *d*); well-smoked thatch is less subject to such damage. Sometimes *tepehua* ants descend on a house in a body; they are allowed free entry, for they rid a roof of animal pests, including mice. The first act of a person who moves into an untenanted house is to build a fire of cornhusks, so that the resulting smudge may cause scorpions, snakes, and other animal life to withdraw.

The floor usually is surfaced with light-colored, calcareous subsoil, and after constant sweeping, it becomes uneven. Brooms are made by tying a bunch of small green branches or a sheaf of sorghum heads (No. 103) to a pole. Some housewives collect the rubbish in a large, shallow gourd; one uses an old metal shovel as a dustpan. In any case, in the course of time, the floor develops holes. It then is well sprinkled with water and allowed to dry; this is repeated several times, until the surface is more or less even. Major disparities are smoothed out with the hand.

### FURNISHINGS

The Totonac home contains a very modest assortment of furnishings. As a rule, kitchen equipment includes a raised hearth, a series of bamboo or plank shelves for storing dishes, cooking utensils, and water jars, as well as one or more hanging frames on which food is kept. Every house has at least one milling stone or metate, which usually occupies a special table or frame; in the more prosperous homes, a commercial hand mill is affixed atop a post set into the ground. Occasionally, a dome-shaped oven forms part of the equipment, but this often is outside and invariably is used only on very special occasions. A few chairs or stools and a table complete kitchen furnishings.

Other household furniture may include a platform bed of split bamboo, a wooden box or a trunk for the storage of clothing and oddments, and, in most houses, a family shrine or altar.

### HEARTH

The bulk of the cooking generally is done on a hearth (*brasero*), which is a platform of convenient height, built against one of the walls, or in a corner. However, *nixtamal* and atole commonly are prepared over a fire built directly on the house floor, the container supported by three inverted pots, which serve as firedogs. Both these foods usually are prepared in quantity and are contained in great pottery jars which would be troublesome to lift on and off a platform; moreover, if they were accommodated on the latter, there would be scant room for other cooking.

There is considerable variation in the hearth platform. Often the frame consists of four substantial posts set into the ground, notched at the top to receive two transverse poles, which are lashed in place with liana (fig. 25, *a*). Across these, a series of closely spaced, lighter poles or bamboo stalks is laid. On top, there may be still another layer, running in the opposite direction. A variant platform is built diagonally across the corner of the room and is supported by three instead of four posts. The upper surface of the platform, and sometimes the sides, are coated with mud plaster, prepared from calcareous subsoil (pl. 14, *a*). In one case, the top has only a thin layer of earth and ash to make it fireproof. Firewood is stored in the space beneath the platform.

Not infrequently the hearth platform is solid. Uprights are set into the ground, and against them a wall is constructed of closely spaced saplings or bamboos. These may run horizontally (fig. 25, *e*) or vertically (pl. 14, *d;* fig. 25, *d*). The zone enclosed by the fence is filled flush with earth and stones and the top plastered with mud. Usually, if not always, the solid type platform is built in a corner of the room and is bounded on two sides by the house wall.

If the top of the platform is left plane, the fire is built directly on it, and each cooking vessel is supported by three inverted pots; seldom are

stones used. One family thinks that less firewood is burned if the platform has a flat top. In some cases, special provision is made for the support of the cooking vessels. Stones are placed on top of the platform to outline a U-shaped ridge (*hornilla*) or two contiguous ones (pl. 14, *a;* figs. 25, *b*, 32, *c–e*, *l*). In the latter case, one is sufficiently large to receive the flat baking plate on which tortillas are cooked; the other generally is smaller, and on it may be set a bowl or a pot in which other food is being prepared.

a thatched roof. Since the oven seldom is for personal use, it generally is known which houses are so equipped. In the entire community, there are 11, possibly 12 ovens. One near the *fundo legal* is used pretty regularly, 1 day a week, to make a small quantity of sweet rolls for local sale; three more in the *fundo* are used only intermittently and, in fact, two of them seem to have fallen into complete disuse. Other ovens function on special occasions only—some, exclusively for All Souls' Day. At that time, the family bakes bread for

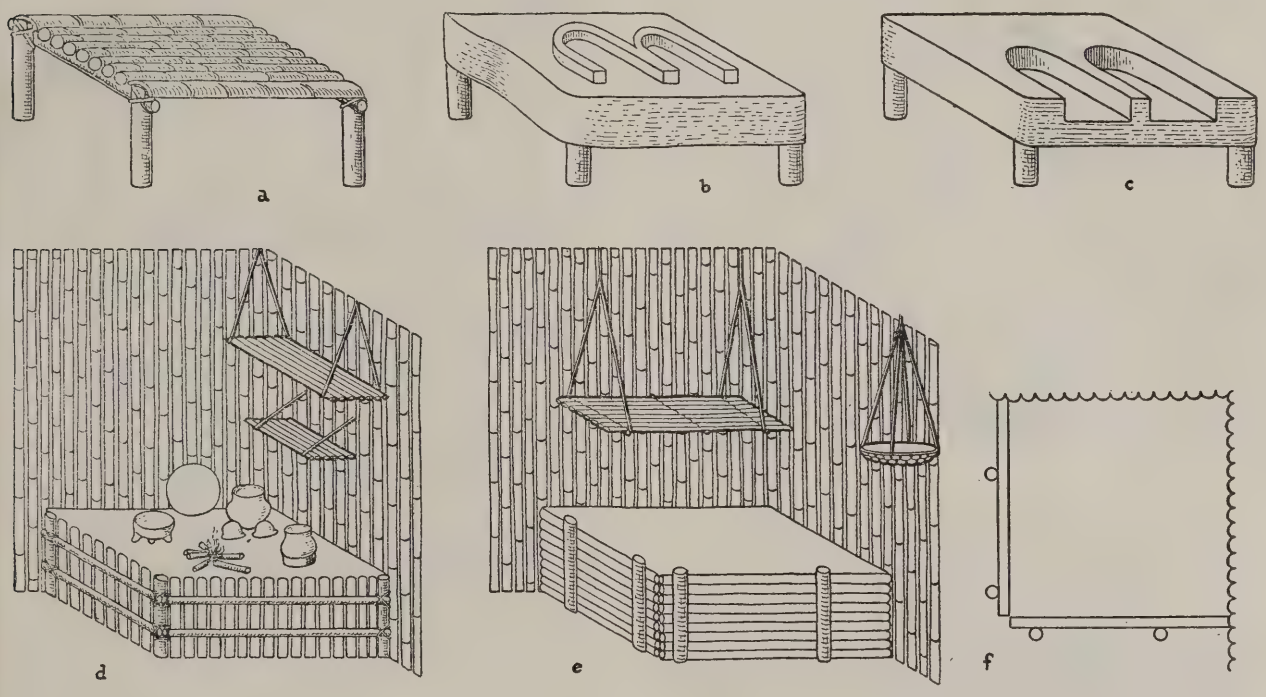


FIGURE 25.—Kitchen hearths. See text (pp. 190–191) for description. *a*, Basic frame for table type platform; *b*, *c*, table type platforms mud-plastered. *b* has raised and *c* has depressed *hornilla*. *d*, *e*, Solid platform hearths. *d* shows hearth in use. Two shelves hang above the platform. Against the back wall, a baking plate stands on edge; to its right is a clay pot supported by firedogs, which are three smaller pots, inverted; to its left, is a commercial grinding bowl. At the extreme right, a pottery vessel sits on a stand, which happens to be a metal ring. *e*, Hearth in an unoccupied house; hanging shelf and coiled frame for food storage have been abandoned along with the dwelling. *f*, Ground plan of *e*, showing arrangement of posts and transverse poles of the hearth.

Occasionally, the U-shaped rests are depressed instead of raised (fig. 25, *c*). As the earth fill nears the top, stones are arranged to outline two U-shaped areas open at the front of the platform. The fill is packed around these and the whole surface plastered with mud.

### OVEN

The oven (*horno*) is a large, dome-shaped affair, built either in the kitchen or out of doors, beneath

its own offering for the dead and, by previous arrangement, for that of the neighbors. Filiberta González sometimes bakes for special fiestas, the purchaser providing flour and lard in advance. A few individuals of either sex know how to make bread; most of them have learned in Papantla.

The oven stands on a platform of mud and stones, which is something under a meter in height. Ordinarily, a mason comes from Papantla to build the dome, which varies somewhat in construction.

Sometimes commercial brick, sometimes stone, is used for the circumference at the base and for the opening (fig. 26, *b*). Generally, the walls of the dome are formed entirely of mortar (*mezcla*); one local attempt to build of mud was a failure. From inspection, construction is not evident, since all ovens are heavily coated either with mud or with mortar.

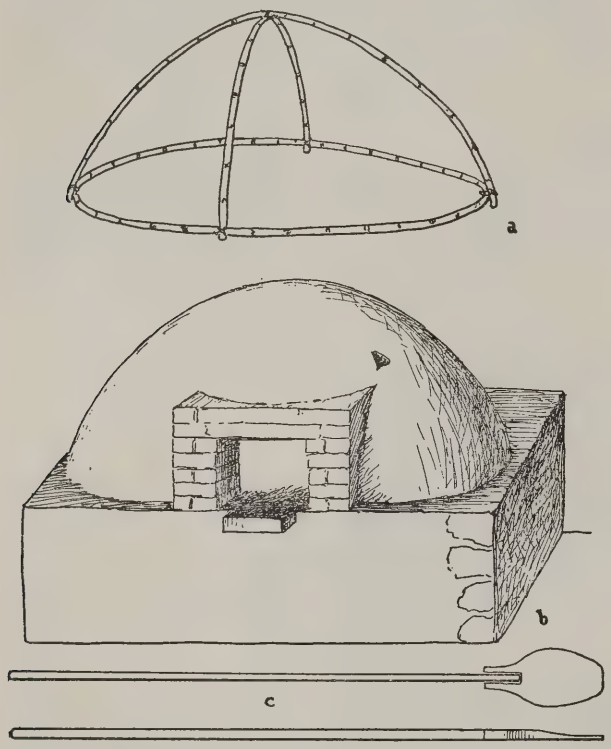


FIGURE 26.—Oven; baker's paddle. See text (pp. 191–192) for details. *a*, Frame over which dome is constructed; *b*, Finished oven, mud-plastered; not to scale. *c*, Wooden paddle (length, 3 m.) used in baking.

Two methods of forming the dome are described. One involves building a mound of earth, which then is coated with mortar. This technique is little favored because of the difficulty of removing the earth core. More frequently, a simple frame is built of three pliable poles or split bamboo (fig. 26, *a*). On top of this frame is thrown an old canvas or heavy cloth, over which the dome is built. Later, the frame is removed, or a fire is built in the cavity and the support burned.

The floor is finished after the dome has been completed. About 3 kg. of granular salt are spread evenly over the surface, "so that the bread will cook." On top of the salt, commercial brick is laid to form the floor.

To heat an oven whose dome is under a meter in height, a load (*carga*) of wood is necessary; a higher dome is impractical, for it requires more fuel. Food to be baked is arranged on a flat tin, and with a wooden paddle (fig. 26, *c*) is placed in and removed from the oven. The paddle (lima-štukan kaštilanšA), between 2.5 and 3 m. long, is made by a local carpenter.

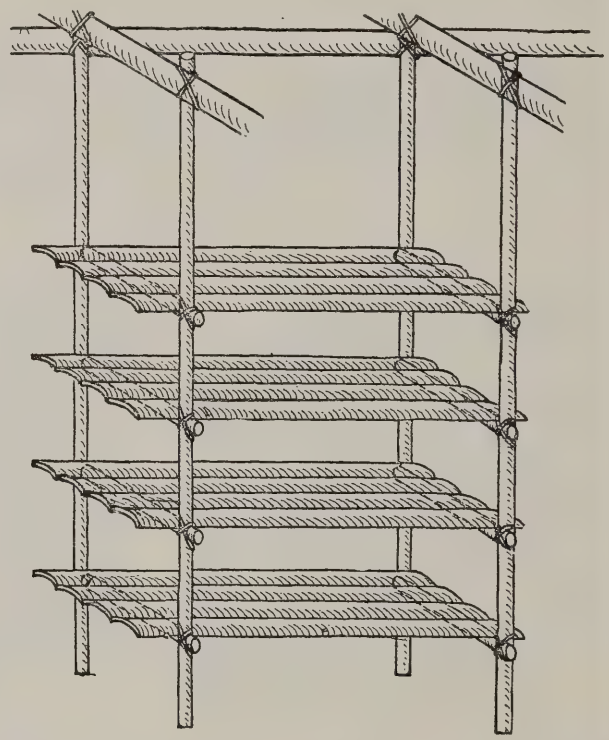

FIGURE 27.—Kitchen shelves. See text (p. 193) for details.

### SHELVES, PLATFORMS, HANGING FRAMES

Storage presents a major problem in every Totonac house. Long planks or bamboos generally are laid across the house beams, thus forming an attic of sorts, in which items not in daily use are cached. Corn husks, bits of paper, gourd spoons, and other small items are stuck in the interstices between the uprights of the wall. Forked-stick hooks are suspended from the rafters or from the wall poles, and on them assorted items are hung; in various ways, other belongings are hung from the wall poles (pl. 13, *a*). Almost every house is literally strewn with odd possessions for which there is no adequate storage space. In one case, we saw a

child, after a prolonged search, locate the family comb beneath the metate.

However, most houses have a certain amount of shelf space. Four or more uprights of wood or bamboo are set in pairs, in the floor of the house; their upper extremities are lashed to the cross beams. Between each pair of uprights, short transverse pieces are tied at spaced intervals, and on them, a series of planks or half bamboos runs longitudinally. The result is a series of narrow shelves (fig. 27) on which dishes, water jars, and other kitchen equipment are kept. Ordinarily such shelves are built against the house wall.

Supplementary storage space for cooking vessels sometimes is arranged outside, against the wall of the kitchen (pl. 13, *d*). Two pairs of forked sticks are set in the ground, with a crosspiece resting in the crotches of each pair. On top, saplings or bamboo rest on the transverse sticks, and on this outdoor rack, pots are stacked, mouth down. Since certain vessels are reserved for certain dishes, a large number of cookpots is used, and few kitchens have sufficient room to accommodate all.

A platform, basically similar, but more substantial, is used as a grinding table. The uprights are either forked or are notched to receive crosspieces on which planks, poles, or bamboos rest. Generally, two feet of the milling stone are on the platform; the third sits in the hollow of a large bamboo post set in the ground immediately in front of the frame, its top flush with the latter. Plate 13, *a* shows such an arrangement in a kitchen which boasts three metates.

Similarly, a table may be improvised on the basis of a forked-stick frame, if it so happens that the family does not have an ordinary table, made by a carpenter.

Most kitchens are equipped with one or more hanging shelves, swung from the rafters with liana or rope. A rectangular, swinging shelf is composed of light poles or split bamboos of uniform length (fig. 25, *d*, *e*). At either end, there is a crosspiece on the under side, to which the poles are affixed with liana, in wrapped twine stitch. Such a shelf generally is adjacent to the hearth, so that the cook may reach to it for salt, brown sugar, lard, or other ingredients.

A circular swinging frame likewise is used for food storage. A withe is bent to form a circle, which then is filled with coil without foundation (pl. 22, *d;* fig. 25, *e*). Both rectangular and circular frames may have a perforated gourd strung on the suspending cord, so that rats and mice do not have easy access to the provender.

### TABLES

Most houses have a simple plank table, with four legs, either squared or turned. These are made by a carpenter, usually one who comes from Papantla for the chore. *Cedro* (No. 219) is the preferred wood. Since varnish or other protective finish seldom is applied, the top becomes greasy within a short while. From time to time, a paste of wood ash is applied to remove the worst of the spots.

A small round-top table occasionally is made with a pedestal base. The top is affixed to a four-sided block of wood. Short slats are nailed at an angle, to each of the four sides of the pedestal, so that the latter is raised above the floor on four short legs (pl. 15, *b*).

As a makeshift, any handy box is used as a table. The platform, supported by a forked-stick frame, has been mentioned above as a frequent substitute for a formal table.

### STOOLS, BENCHES, CHAIRS

The Totonac do not sit on woven mats spread on the floor. They use a variety of low stools (ta·štíkat'), now less common than in former years. Some are cylindrical, being simply short lengths cut from the trunk of a tree (pl. 20, *b*, middle foreground). Others include the section of the trunk, where the branches begin to fork. Inverted, the stumps of the branches serve as feet for the stool (fig. 28, *a*).

Somewhat more elaborate one-piece stools also are current. One is a rectangular block of cedar, hollowed slightly on the under side, so as to form four feet (fig. 28, *b*). Another is more deeply hollowed and is equipped with a handle (fig. 28, *c*). The latter form is of general utility, but is said to be especially useful when one is bathing.

Sometimes special seating provision is made for small children. A section of tree trunk may be prepared in miniature, and one little girl has her own, small-scale stool with handle (pl. 14, *c*). An inverted wooden tray provides a makeshift seat for a small child.

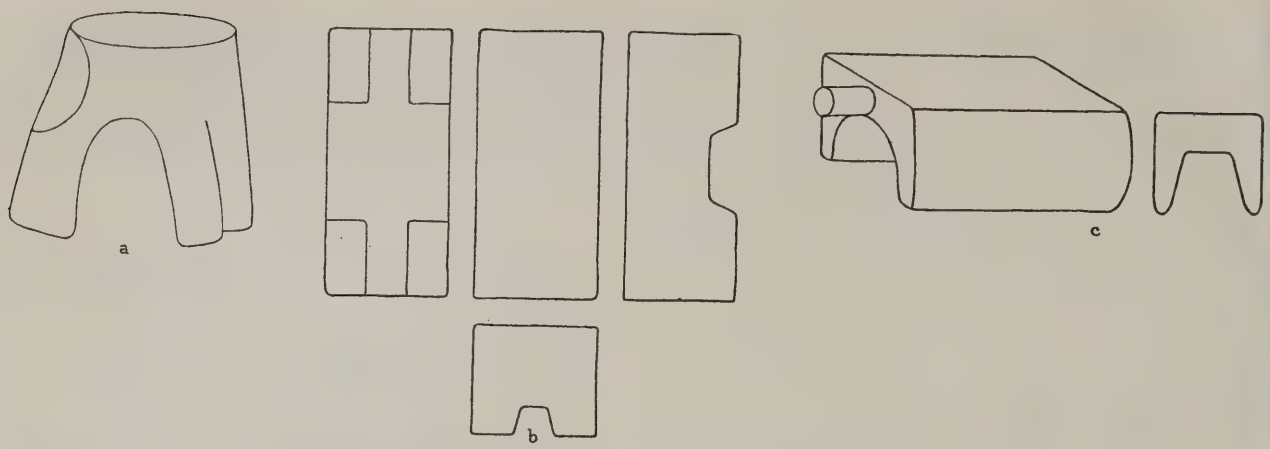


FIGURE 28.—Wooden stools; all one-piece. See text (p. 193) for details. Redrawn from field sketches; scale: 1/12 natural size.

One informant had heard that in "former times there were no chairs, only small stools," and the *banco* mentioned by Clavijero (1:303) may refer to one of the latter. In any case, it seems likely that the simple stool is an old and widespread culture element in eastern and southern Mexico and farther south.[19] However, Las Casas (p. 461) and Torquemada (1:398) speak of "chairs," and the former (p. 463), adds a somewhat confusing statement to the effect that the ancient Totonac priests used backrests of rushes.

Nowadays, long plank benches (šman ta·štíkat', long stool; langa ta·štíkat', large stool) are common. When a sawyer is cutting lumber for the house, a thick plank from the center of the cedar tree is set aside for a bench. At each end, it is perforated to receive two squared legs, which are inset at an angle (pl. 14, *f*). Similar benches, but poorly made, are reported for some of the Sierra Totonac, near Zacatlán (information from Angel Palerm).

Today, simple, straight chairs are common; they have horizontal back slats and a seat of woven palm. Eight or ten men in Tajín, not regarded as carpenters, make such chairs for their own use and, by request, for sale to neighbors. The current price is between $3.00 and $4.00 pesos. There are two heights: one, which we should consider normal for adults; another, which to us would be considered child's size. The latter height is the more popular, and both children and adults use these low chairs (pls. 14, *b*, 28, *e*).

The roughly hewn frame is of cedar (No. 219). Leaves of the *palma redonda* (No. 259) are spread to bleach on top of one of the trimmed *chote* trees (No. 10) usually used for drying clothing. They are exposed to sun and dew for several days, care being taken that they do not become too moist and, as a consequence, dark in color. As the seat is woven, two strips of the palm leaf are twisted slightly in the hands; as needed, a new strip is inserted into the twist. Seats sometimes are woven in simple, pleasing patterns which, unfortunately, we did not record.

Occasionally, one sees a *butaca* (no Totonac name), identical in form to one illustrated by Covarrubias (1947, p. 267, *lower right*). The frame is of cedar, and the continuous back and seat may be of thin, transverse slabs of wood, or of deerskin or canvas. This semireclining chair is much more common in Papantla than in Tajín.

[19] The Sierra Totonac sit on "small stools made from chumps of wood" (Lombardo Toledano, p. 35), and the modern Chinantec use low stools, "often mere blocks of wood" (Bevan, p. 79). In Zapotecan Yalálag, formerly stools were made "of roots and trunks of trees" (De la Fuente, p. 44).

Although these descriptions are by no means precise, it is clear that a one-piece stool, hollowed on the under side, and sometimes handled, is of very respectable distribution. In the Chicontepec area of the Huasteca, Alfonso Medellín has seen stools similar to those of Tajín, as has Angel Palerm, in some of the Sierra Totonac villages near Zacatlán, in Puebla. Roberto Williams reports similar specimens from Santa María Tatela, in the Huatusco area of Veracruz. A photograph taken in Zapotecan Mitla shows a stool identical with those of Tajín (Parsons, pl. XLVIII*b*). Among the Popoluca, the stool may be with or without handles (Foster, 1940, p. 14); and the Maya appear to use a handleless form (Steggerda, pl. 10*c*; Wauchope, pl. 34*a*). The Lacandones do not share this culture element, but the Tzeltales are said to have such stools, handled (information from Philip Baer). Moreover, in the National Museum, in Washington, four specimens labeled "Talamanca" Indians, Costa Rica, are on display. All are one-piece, four-footed; and one has a handle in effigy form. Similar specimens are reported (Stone, fig. 7*b*, *c*) for the Boruca of Costa Rica.

### MISCELLANEOUS KITCHEN EQUIPMENT

The larger items of kitchen furnishings—hearth, shelves or frames, hanging frames, tables, chairs, and benches—have been mentioned above. Naturally, the last three are not confined to the kitchen, but also are used in the living room, and occasionally in the bedroom.

Pottery appears in profusion in every kitchen. Most of it is home-made, but almost every establishment has at least one glazed bowl, for frying food, and one glazed water jar, both imports from the highlands. Pottery is discussed elsewhere (pp. 212–220), as are gourd utensils, stirring sticks, and wooden trays (pp. 209–212). Recent innovations—the metal maize mill and the kerosene lamp—likewise receive separate attention (pp. 198–199).

Wooden spoons, bought from vendors from the highlands, or from tradesmen in Papantla, are used in most households, in the preparation of food. In addition, every kitchen has a knife or so, to supplement the machete; table cutlery is almost unknown (p. 172). Some families eat food from heavy, commercial crockery; others use enameled ware; children commonly are fed from plates or bowls of home-made pottery.

In addition, every house has at least one stone metate, sometimes three, rarely more. These are of black basalt; a representative specimen measures about 75 cm. in length and 45 in width. Invariably the metate is tripod; when in use, the single foot at the rear rests in the cavity of a bamboo, which is set upright in the floor, against the grinding table (pl. 13, *a*). The three legs are of about the same height, but owing to the bamboo rest, the grinding surface is considerably inclined.

Some metates are coarse-grained; others noticeably finer. Two women insist that there is no difference whatsoever in function; both serve either to break the *nixtamal* or to reduce it to a fine paste. However, in the house of Pablo González, one metate is reserved for rough grinding; thereafter the dough is passed to one of the milling stones next in line, where it is reground. In a home which has no metal mill, dough for tortillas is prepared exclusively on the metate, being ground several times in order that it be sufficiently fine. But if there is a metal mill, the preliminary grinding takes place in it; invariably, the maize is further ground on the metate. When not in use, the milling stone is washed and stood upright on the grinding table, against the wall of the house.

The *mano*, or handstone, varies considerably. Some are the same width as the metate; others, with tapering ends, overhang a few centimeters on either side. Often, through use, the handstone is four-faceted.

Metates and *manos* are not of local manufacture. Those considered best come from the highlands and are purchased from vendors from the San Andrés area. These utensils are, however, excessively expensive. About 8 years ago, one could be purchased for $10 or $12 pesos; now $50 or even $60 is the asking price. Since a metate from the highlands is a lifetime investment, the Totonac are willing to pay a considerable sum.

Metates of similar form, reputedly from nearby Tihuatlán, are sold in Papantla stores, the price ranging from $12.00 to $20.00 pesos, according to size. However, the stone is soft, and there is little demand for these utensils. Occasionally, a milling stone found archeologically is put to use; if the handstone is lacking, a modern one is pecked until size and shape accord. In plate 13, *a* the metate on the left is from the highlands, but the other two are archeological.

Upon special occasions, chocolate is drunk, and as is usual in Mexico, it is beaten until it froths; in fact, in Tajín, sometimes only the foam is served. The wooden beater so commonly used in Mexico occasionally is seen locally; it consists of a staff, with an enlarged knob at the end, above which are one or two loose wooden rings.

However, the home-made beater is much more common. It is an ingenious device, twirled between the palms of the hands (pl. 20, *a*). There are two kinds, both with the same name (*molinillo*, išlimapupikán).

One is made from a thin wooden wand, trimmed neatly, and split at one tip by two lengthwise cuts, at right angles to one another. Into these, strips of corn husk are placed, alternately, in opposing directions. The husk is forced into the slits until the latter are filled solidly, following which the tip is tied with a narrow strip of the bark of *jonote blanco* (No. 25). The bark first is tied about the tip of the split wand; the ends are passed to the opposing side and are retied; thence back to the first side, again to be tied. One strand now is wrapped clockwise about the split, passing between the strips of husk; the other is wrapped counterclockwise. At the base of the slit, the bark strips once more are tied together. The husk is trimmed, and an effective beater awaits use (fig. 29, *a*).

The other beater is made of the *tepejilote* (No. 97). The entire plant is pulled from the ground; the roots are trimmed to even length; the whole thing is washed; and the beater (fig. 29, *b*) is ready for use.

Every kitchen is adorned with corn husks. Large bundles are stored in the space above the rafters, and a small quantity is kept at hand, stuffed in the interstices of the poles which form the kitchen wall. The dried husks have many uses. Eggs are wrapped in them (p. 92); likewise, cakes of brown sugar (pp. 103, 131); so also is seed of squash and gourd; and smoked fowl is stored in them. If one buys lard, he brings it home in a husk; meat or cracklings are wrapped in several. Moreover, if one wishes to make a gift of fruit, such as *limas*, it apparently is a delicate gesture to deliver each fruit in a corn-husk cover. In short, in the Totonac kitchen, husks take the place of our waxed paper and our wrapping paper.

Ladders are found in many houses; although their use is by no means confined to the kitchen, they may be mentioned here. One type consists of a single stalk of bamboo, simply notched; it has a deep cut immediately above each joint of the cane (fig. 30, *a*). Another consists of a bamboo stalk, with short stubs of the side branches left in place; since these are alternate, the result is a simple ladder (fig. 30, *b*). Other forms of ladders perhaps are inspired by Papantla models. One is made by perforating two bamboo stems and connecting them with a series of rungs; still another, simply by nailing crosspieces to a pair of wooden uprights.

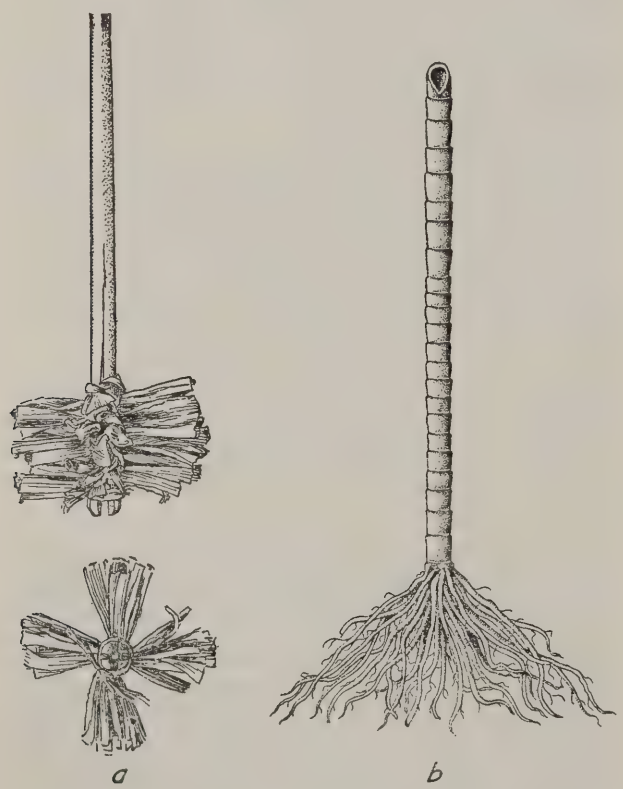


FIGURE 29.—Chocolate beaters. *a*, Short lengths of cornhusk placed in cleft stick; *b*, stem and root of *tepejilote*. See text (p. 195–196) for details. Length of *a*, 34.5 cm.; *b*, same scale.

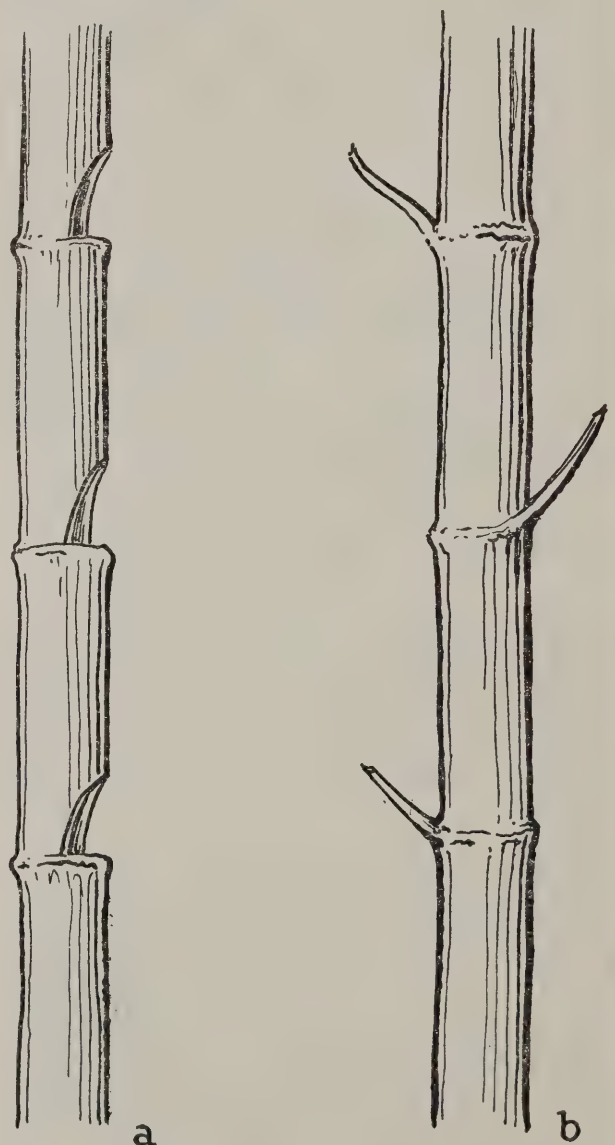


FIGURE 30.—Bamboo ladders. Redrawn from field sketches. *a*, Notched; *b*, side-branch stubs left in place. Not to scale.

### SLEEPING ACCOMMODATIONS

The hammock is unknown in Tajín. As far as we know, there is but one bed with springs in the entire community, the proud possession of a prosperous merchant, Totonac, but a native of Papantla. Some of the more sophisticated families have one or more canvas cots—the canvas stretched taut between two poles which, at each end, are attached to scissorlike supports. The latter may be closed, but the lengthwise axis of the cot is stationary. Of the 39 families covered by the census, nearly half sleep exclusively on woven palm mats which are spread on the earth floor by night and which, by day, are rolled and stood in one corner of the room. A simply trestle or platform bed, described below, likewise is popular.

These sleeping facilities are found in various combinations:

| | *Number of families* |
|---|---|
| Bed with springs | 1 |
| Canvas cots exclusively | 3 |
| Canvas cot and floor | 2 |
| Canvas cot and platform bed | 2 |
| Canvas cot, platform bed, and floor | 2 |
| Platform bed exclusively | 4 |
| Platform bed and floor | 8 |
| Floor exclusively | 17 |
| | 39 |

The above sleeping accommodations may be arranged in order of elegance and comfort as follows: bed with springs, canvas cot, platform bed, and floor. This sequence accords very neatly with what might be called social stratigraphy within the family. If the household boasts a canvas cot, invariably it is occupied by the head of the family and his wife; the sons may sleep on a platform bed, and the daughters, on the ground. Similarly, if the trestle bed is the best the house has to offer, it is occupied by the man and his wife. Other members of the family may sleep on the floor, although sometimes the sons likewise are given trestle beds, while their sisters make shift on the floor. In all cases, first preference goes to the parents; next, to the sons. The daughters, although adult, usually sleep on the ground. One man jocosely expresses the situation thus: "The children and the lazy ones sleep on the floor."

The frame of the platform or trestle bed consists of four forked posts set into the ground, with a connecting pole on each long side. At either end, a transverse pole is added (fig. 31), and on this simple frame, are laid specially prepared lengths of bamboo:

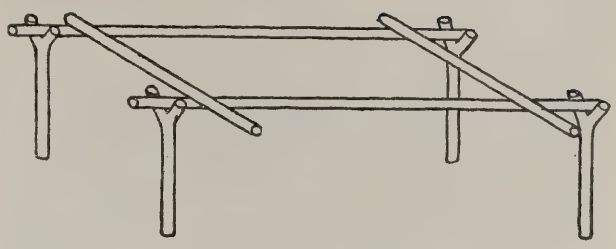

FIGURE 31.—Bed frame. Specially prepared bamboo is laid lengthwise on the trestle; see text (p. 197) for details. Not to scale.

> The unsplit bamboo stalk is cut to the length of the bed. Its joints are trimmed with the machete, so that the surface is relatively smooth. Next, the bamboo is partially shredded by being hacked lightly with the machete, but it is not broken sufficiently to part company. Finally, the machete is laid longitudinally against the shredded bamboo and is pounded with a stick, to open the stalk definitively (pl. 14, *e*). Thus severed, the bamboo is spread to form a broad, more or less flat surface—largely split, but held together at the joints. Several such lengths are laid longitudinally on the trestle.

On top of the split bamboo is spread a woven palm mat, purchased in Papantla. One woman prefers the floor to the bamboo bed because the latter "once dry, squeaks unpleasantly in the night."

A pillow is used, even if one sleeps on the ground. In one household, it is a small, cylindrical trunk of wood. More commonly, a simple bag of cotton cloth is filled with rags or with the lint of the local perennial cotton, and the open end is tied.

Bedding is definitely casual. A man uses his poncho (*jorongo*) as a cover; for the women, a good many families buy cheap, cotton blankets in Papantla; those not so equipped, use an odd grain sack as a cover.

### HOUSE DECORATION; ALTARS

It is very much in vogue to hang large motion picture posters, in lurid colors, on the interior walls of the "parlor" (pl. 15, *b*, either side of altar). Usually they are hung vertically, but other arrangements, which do violence to the lettering, are not spurned. These posters are sold in the Papantla market. Highly colored pictorial wall calendars also are popular. If they are published in several sheets, the latter are hung sepa-

rately. Infrequently, walls are decorated with illustrations cut from old magazines.

Aside from these ornaments, interior decoration is concentrated on the domestic shrine. As an altar, almost every house has either a table or planks resting on a trestle. The top and sides are covered with cotton cloth—sometimes in plain colors, sometimes printed. On top of the table are arranged the images of various Christian saints, usually chromos, but occasionally 3-dimensional images, the latter purchased principally from vendors who come from the Sierra de Puebla. Images sit in deep, highly varnished cedar "niches" or frames, made to order locally or in Papantla. The frames are glassed and may be ornamented with ribbons and artificial flowers. A vase or two of flowers—often well desiccated—likewise adorn the altar, and generally there are one or two home-made incense burners and candlesticks. In daily practice, the altar is a convenient spot on which to place odd paraphernalia—perhaps a bit of sewing, a gourd, turkey eggs, stumps of candles, medicines, and empty bottles. Usually, the entire assortment is covered with a fine patina of dust.

The tempting space beneath the altar does not go to waste. In it may be cached extra dishes, old bottles both empty and full, the season's supply of wild chili, cut lumber for chairs, a defunct sadiron, a scale for weighing vanilla, odd bits of wire, and assorted stone idols which have been collected in the fields. This medley is hidden from public view by the altar cloth. In one remote household, the space beneath the table must have been relatively clear, for the hostess, alarmed at our approach, took refuge there.

At the rear of the altar is the house wall, often covered by a cloth. On the three remaining sides, the altar is crowned by a canopy. A post is set in the ground at each corner of the table and, above, is tied to the rafters. A pliable sapling is arched and lashed to the two front posts, with another on each side (pl. 15, *b*). Colored tissue paper is pasted in panels to cover the area above the arch. Sometimes there are two layers of tissue paper, in contrasting color, the uppermost with an elaborate cut-out design. Commercial patterns are used, and motifs range from standard religious symbols to the Mexican eagle and a Plains Indian warrior with full headgear. In many cases, considerable ingenuity and taste are shown in altar decorations.

For special occasions the altar is elaborately ornamented with green sprays and woven palm "stars" (pl. 15, *a*) into which flowers are stuck.

### MODERN INNOVATIONS

Of modern equipment, a kerosene lamp is the most frequent. It will be mentioned in greater detail in the succeeding section.

Next in frequency comes the metal mill for grinding maize. It resembles one of our metal meat choppers, but is somewhat larger and heavier. Of our 39 families of the census, 23 have metal mills for corn. A substantial post is sunk vertically into the kitchen floor, and a small square or rectangular board is nailed to its upper end, which has been trimmed flat; to the board is affixed the mill. A container, in which the ground corn is caught sits likewise on the board.

Clocks—usually cheap alarm clocks—are owned by 6 of our 39 families, accounting for a total of 8 timepieces. By no means all of them function; several we know to be archaic and out of order. Except for these privately owned clocks, Tajín has no precise way of measuring time. The school has no clock, and the teacher rings the bell at any moment convenient to her; the timing is not sufficiently accurate to serve as a measure for the families of the *fundo legal.*

Sewing machines are about as plentiful as clocks, and there is a total of 8 among our 39 families of the census. Three, incidentally, are owned by families which also boast a clock. Sewing machines, like most of the clocks, are rather ancient treadle models, apparently purchased in the days when vanilla was sold at a good price. Every woman who has access to a sewing machine is a professional seamstress, on a very modest scale. For a few cents, she will oblige a neighbor by running up a seam for her, or she will make a garment outright. Accordingly, every family possessed of a machine realizes a few pesos a year from its use.

We know of only one family which has a portable phonograph and only one with a radio. The latter runs on batteries and, as far as we know, is little used. Needless to say, it belongs to a household with strong city ties.

### ILLUMINATION

There are traditions of ancient forms of illumination. The native bee seals the openings of its

hive with a hard, almost black, waxlike substance, known as *atakawite* (p. 97), not to be confused with ordinary wax. In former times, this product was lighted with a coal, placed on a clay dish, and allowed to burn; no wick was necessary. "With *atakawite* the ancient ones lighted their houses; it has a nice odor as it burns."

It is said that years ago the wax of the European bee was made into a ball and burned as described above. Or, slashes were made in the trunk of the *chaca* tree (No. 228), the liquid collected, presumably allowed to solidify, and the gum burned in a clay dish.

These forms of illumination now are a thing of the past, and coal oil is burned in commercial lamps in all the houses with which we are acquainted. Kerosene lamps, with glass chimneys, are found in 13 of the 39 households of our census, and there is a total of 16 such lamps among the 13 families.

A much less elegant type of kerosene lamp is, however, far more popular. It consists of a small tin, filled with fuel. The tight-fitting cover is perforated and through it a wick emerges. There is no chimney; the lamp is virtually unbreakable, and the flame survives anything short of a really high wind. This type of lamp is quite general in rural Mexico, being used in homes, but most particularly by professional muleteers on their journeys. The lamp usually is made by a small town tinsmith from scraps and old tin cans. Every one of the 39 houses of our census has at least one such lamp, and among them there is a total of 83, or a bit more than two per ménage.

In Tajín, there are no gasoline lamps, and our popularity resulted, in large measure, from the fact that we were supplied with them. Since, under ordinary circumstances, an evening festival is literally a very dim affair, we were in considerable demand, and an invitation generally was extended jointly to us and the lamps.

Flashlights are reasonably common but by no means universal in Tajín. Candles are used in 26 of the 39 houses; but in 22 cases, it is stated specifically that their sole function is religious; "they are for the saints." From time to time, in an emergency, a candle is used to light the house, but the main reliance today is upon the little kerosene apparatus, without chimney. Fuel is bought in Papantla or, at slightly higher price, in the small stores in Tajín.

### FURNITURE ARRANGEMENT

We have discussed the standard furniture equipment of the Tajín dwelling, and the accompanying sketches (figs. 32, 33) show how this furniture is arranged in a series of representative homes. The sketches show single rooms, each a separate building, although some have porches or a poultry house adjoining. In figure 34 is given the arrangement in a house which is partitioned into two rooms, with storage space and granary adjacent.

An idea of a ménage as a whole is given later, in map 9 (pp. 204–207) which indicates the various separate buildings occupied by a single family, together with furnishings and patio treatment.

### SUPPLEMENTARY DOMESTIC STRUCTURES

Supplementary domestic structures include: a sweathouse, an outhouse, a granary, a shelter for pigs, a poultry house, a laundry, and odd roofs, unwalled, which protect various kinds of domestic equipment. No house boasts this entire repertoire of accessory buildings, but most have a laundry, while the other structures are far less frequent. Poultry houses have been treated previously (p. 90); as a matter of convenience, fences will be described at the end of this section.

### SWEATHOUSE

The sweathouse (*temascal*, šáqa) is a popular institution in Tajín. Students in our group inspected 24, and there are at least two others which were not viewed. Four more are in ruins, one having been dismantled so that the stones could be used in building an oven. Accordingly, in recent years, there has been a minimum of 30 sweathouses in the community, and undoubtedly a few in outlying parcels have escaped our attention. It is said that formerly the sweatbath was more popular; quite generally, the older people prefer it and the younger tend to spurn it.

The sweathouse is located in the patio of the house, a short distance from the dwelling. We took no measurements, but it is said that a maximum of three bathers can be accommodated; in plate 16, *b*, the individuals give an idea of scale.

Construction varies considerably, and the description below is based on the 24 structures which were observed in some detail. Of these, half are

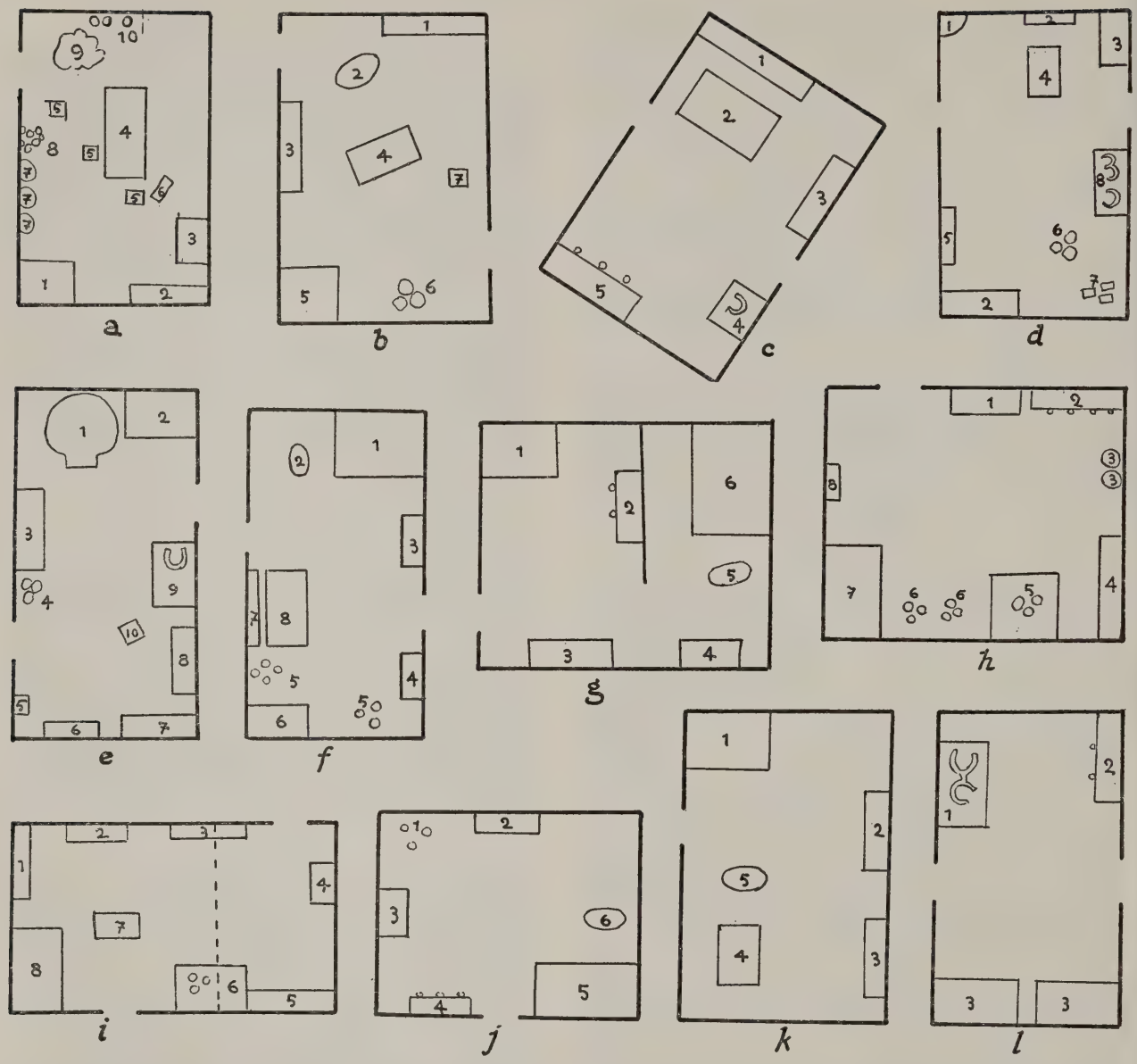


FIGURE 32.—Furniture arrangement in kitchens. *a–d*, Used exclusively for cooking; *e–l*, for cooking and sleeping. Free-hand sketches, not to scale; north roughly toward top of page. Furniture indicated, exclusive of hanging shelves, which are found in virtually every kitchen.

*a*. 1, Raised hearth; 2, shelves; 3, grinding table; 4, table; 5, low, straight chairs; 6, wooden box containing coffee; 7, large water jars, on floor; 8, heap of calabashes, to be made into containers; 9, maize dumped on floor; 10, assorted cooking vessels on floor. Just north of 1, provisions are stored on three frames hung from the rafters.
*b*. 1, Shelves; 2, cradle hung from rafters; 3, grinding table; 4, table; 5, raised hearth; 6, hearth on floor, for preparing *nixtamal*, inverted jars as firedogs; 7, low, straight chair.
*c*. 1, Bench; 2, table; 3, shelves; 4, raised hearth; 5, grinding table, upright bamboos in front to support foot of metate.
*d*. 1, Sherd, forming nest for setting hen; 2, shelves; 3, frame for water jars; 4, table; 5, grinding table; 6, hearth on floor, for *nixtamal*, inverted jars as firedogs; 7, hearth on floor, stones as firedogs; 8, raised hearth.
*e*. 1, Oven for baking; 2, platform bed; 3, table; 4, hearth on floor; 5, post, supporting handmill; 6, frame for water jars; 7, table; 8, grinding table; 9, raised hearth; 10, low, straight chair.
*f*. 1, Maize crib; 2, cradle hung from rafters; parents and older children sleep on mats spread at night on floor; 3, shelves; 4, grinding table; 5, hearths on floor; 6, raised hearth; 7, bench; 8, table.
*g*. Room with partition: 1, Raised hearth; 2, grinding table, bamboo set in front to receive foot of each metate; 3, table; 4, frame for water jars; 5, cradle hung from rafters; 6, platform bed, occupied by three women.
*h*. 1, Table; 2, grinding table; 3, large water jars on floor; 4, frame for water jars; 5, raised hearth, with three inverted jars on top, as firedogs; 6, hearths on floor; 7, platform bed; 8, ancient model sewing machine.
*i*. To right of dotted line, poles, bamboos laid across rafters to form storage space above kitchen. 1, Table of boards resting on forked-stick frame; 2, shelves; 3, bench 4, large cane birdcage; 5, grinding table; 6, raised hearth; 7, low table; 8, platform bed; on top and beneath it, setting hens nesting in large sherds.
*j*. 1, Hearth on floor; 2, shelves; 3, table; 4, grinding table; 5, platform bed; 6, cradle hung from rafters.
*k*. 1, Raised hearth; 2, grinding table; 3, shelves; 4, table; 5, cradle hung from rafters; man and wife sleep on mats spread at night on floor.
*l*. 1, Raised hearth; 2, grinding table; 3, platform beds.

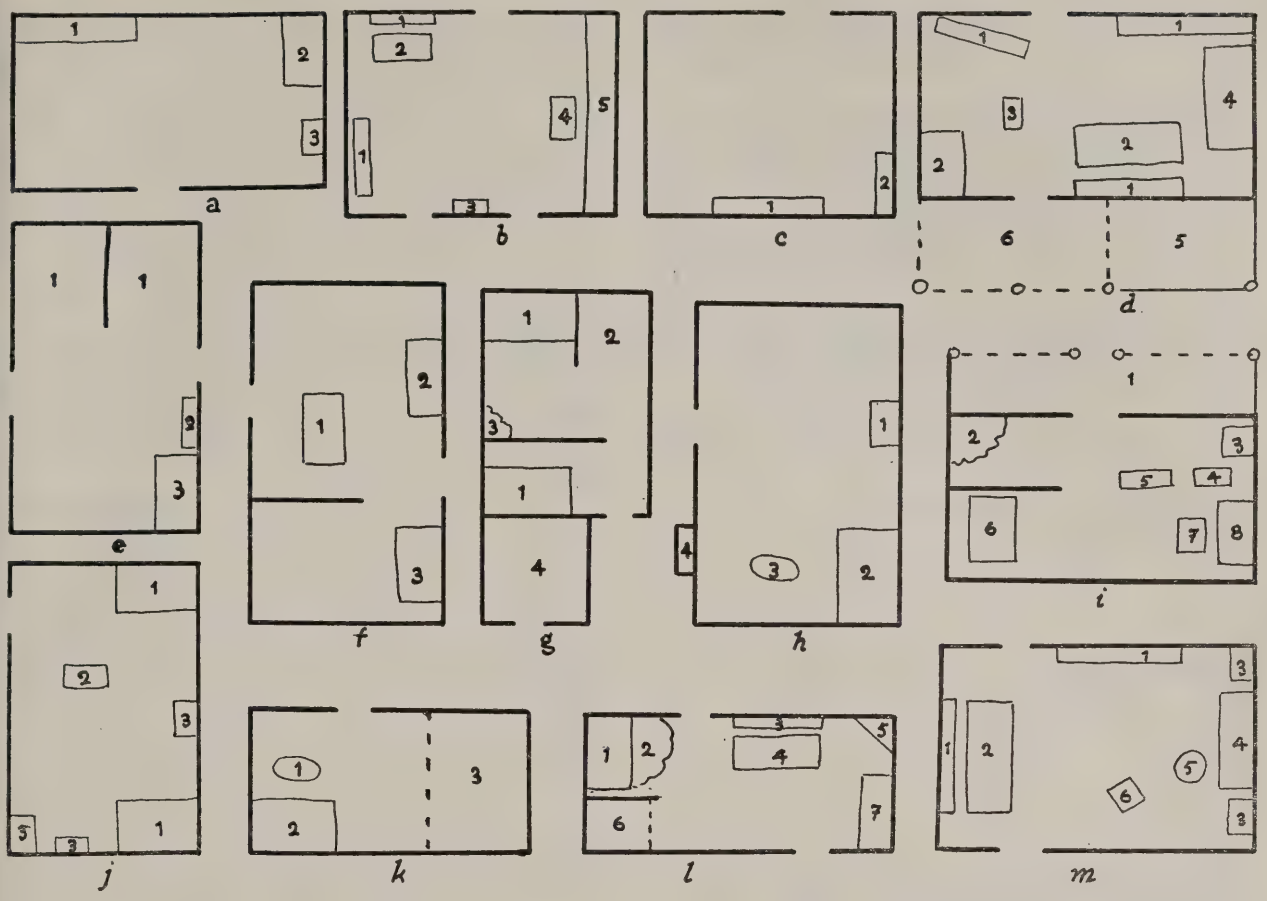


FIGURE 33.—Furniture arrangement in living rooms and bedrooms. *a–e*, Living rooms; *f*, *i*, *l*, *m*, living rooms and bedrooms combined; *g*, *h*, *j*, *k*, bedrooms. Freehand sketches, not to scale; north roughly toward top of page.

*a*. 1, Bench; 2, altar; 3, sewing machine.
*b*. 1, Benches; 2, table; 3, table for portable phonograph; 4, low table; 5, altar, across full width of room.
*c*. 1, Bench, 2, altar.
*d*. 1, Benches; 2, tables; 3, sewing machine; 4, altar; 5, maize crib, movable front wall; 6, porch (*corredor*), formed by extension of roof; east half occupied by maize crib.
*e*. 1, Maize cribs; 2, bench; 3, altar. On outside of south wall are hung several clay pots containing native bees.
*f*. With partition. 1, Table; 2, altar; 3, canvas cot.
*g*. With partition; poultry house adjoining. 1, Platform beds; 2, maize crib; 3, sherds forming nests for setting hens; 4, fowlhouse.
*h*. 1, Wooden chest on trestle; 2, platform bed; 3, cradle hung from rafters; 4, cane cage containing doves (*palomas*).
*i*. With partition and porch. 1, Open porch covered by extension of roof; 2, heap of maize on floor; 3, table; 4, sewing machine; 5, bench; 6, canvas cot; 7, low table; 8, altar.
*j*. 1, Platform beds; 2, sewing machine; 3, wooden chests on trestles.
*k*. 1, Cradle hung from rafters; 2, platform bed; 3, maize bin with movable front wall.
*l*. 1, Platform bed; 2, heap of maize on floor; 3, bench; 4, table; 5, diagonal compartment, wall of horizontal bamboos, filled with corncobs; 6, maize crib, movable front wall; 7, altar.
*m*. 1, Benches; 2, large table; 3, storage chests on trestles; 4, altar; 5, round table; 6, low, straight chair. At night, girls of family sleep on mats spread on floor

built on level ground and half have been excavated into a slope. Of the former, one is partially excavated and one fully so; thus, regardless of being on level land, they are respectively semisubterranean and subterranean. The 24 structures may be summarized thus: 11 subterranean, 3 semisubterranean, 10 surface.

Usually (17 cases) the ground plan is square or rectangular; two chambers have rounded corners; two may be described as semicircular; one is pentagonal; and for two, we have no data.

With subterranean forms, the face of the excavation constitutes the back and side walls and, in at least one case (pl. 16, *e*), the part of the front wall not occupied by the doorway. The entire front sometimes is left open as an entrance, or a rough stone wall is built across the front. Sometimes upright poles, set into the ground, sometimes planks, form the front wall of the subterranean chamber.

Semisubterranean structures have the wall above the excavation of stone masonry. In one case,

the face of the trench, which forms the lower wall, has been lined with horizontal poles, to prevent collapse.

Entirely superficial structures generally are of rough masonry—stones or slabs, set in mud mortar (8 cases). One chamber has the front and back walls of stone, the side walls of upright planks. Another (pl. 16, *d*) has masonry only at the rear, while the front wall is formed by upright poles and bamboo, mud-plastered; the side walls are of heavy poles, laid horizontally, and held in place by two vertical posts at each corner.

Some sweathouses have a forked post at each corner, which supports framing poles; usually,

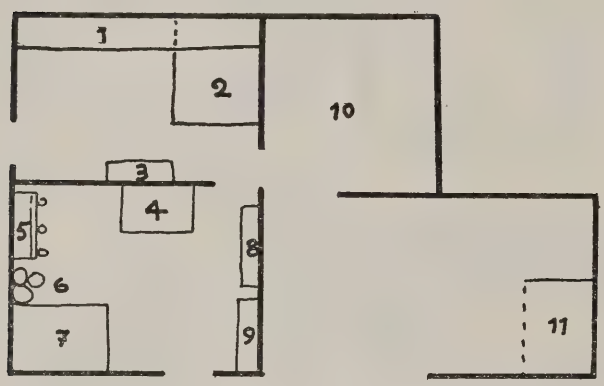


FIGURE 34.—Furniture arrangement in single house of several rooms. A partition divides the main room into bedroom and kitchen. 1, wooden plank shelf, extending full width of room, above bed (2); 2, platform bed; 3, wooden box; 4, table; 5, grinding table; 6, hearth on floor, for *nixtamal*; 7, raised hearth; 8, bench; 9, shelves; 10, storage space, vacant at the moment; used as sleeping quarters when roof of main rooms leak; 11, maize crib, sometimes used as pen for hogs.

this is not necessary if the walls are of stone. The doorway sometimes is framed by a forked post at either side, in the crotches of which a lintel rests (pl. 16, *b*). As a rule, the entrance is in the center front, but in two chambers it adjoins a side wall. Orientation is not consistent. Half the structures have the entrance to the south; others vary, but northwest and southeast are not represented. When the chamber is in use, a blanket or woven mat is hung over the doorway.

Regardless of wall construction, the roof ordinarily is flat (20 cases); one is gabled (pl. 16, *b*); another is in the course of construction and the roof form not evident; and for three, no note was made. If there are forked posts at the corners, a transverse beam is laid in their crotches, along the top of each side wall. In many cases, however, the beam is laid directly on top of each side wall. Resting on these beams, and running at right angles, are closely spaced poles (in one instance, bamboos). The poles are covered with a layer of grass or of leaves—palm, banana, *laurel*, *misanteca* (No. 169), *pimienta* (No. 30), *estribillo* (No. 61), *palo de rosa* (No. 171). The final layer is either mud or earth, sometimes so heaped as to give a slightly convex contour (pl. 16, *e*).

A floor of loose planks, of planks and bamboo, of bamboo alone, or of poles, rests on a transverse beam laid directly on the ground, at the base of each side wall; accordingly, the wooden floor is raised a few centimeters.

Interior furnishings of the sweathouse are simple. The hearth, generally at floor level, consists of a series of stones so arranged that a fire may be built beneath. Ordinarily, the stones are supported by a couple of sizable slabs, leaned diagonally against one another to form a gable-shaped cavity for the fire; in plate 16, *c*, the slabs apparently have fallen. When the chamber is subterranean, the hearth may be inset somewhat into the earth wall. A fire is maintained for a couple of hours before the bath is to be used. By the end of that time, the stones are well heated and vapor is produced by dashing cold water on them, using half a calabash shell as a dipper. During this process, the mouth of the hearth is closed by a large sherd, so that water does not fall directly on the coals. Apart from the hearth, sweathouse equipment includes several calabash dippers and one or two clay pots for the water (pl. 16, *c*). Strewn on the floor are sprays of various plants (Nos. 2, 30, 32, 61, 68, 97, 159, 205, 207, 318) with which the body is whipped lightly during the bath.

### OUTHOUSE

The outhouse is extremely rare and is confined to the *fundo legal*. The new school is provided with a casually built plank structure, allegedly an outhouse, but apparently not used. We know of only three others (map 7, lot Nos. 19, 21, 52)—one at the establishment of a non-Totonac merchant, who is a local resident; and the two others among Totonac families above average in sophistication and town contacts. In nowise can any of the structures be considered adequate or hygienic and, to all intents and purposes, Tajín is completely wanting in sanitary facilities.

tree or shrub, cultivated for fruit

other tree or shrub, not cultivated

ornamental plant, cultivated

pottery vessels

Row of chaca trees

NM

0 1 2 3 4 5 m

MAP 9.—A typical menage.

(For legend, see pl. 204, top.)

### GRANARY

By no means does every family build a separate structure to serve as a granary. Thirty-seven families store their maize as follows:

| | |
|---|---|
| Special building | 13 |
| In the dwelling, room not specified | 5 |
| Living room | 7 |
| Bedroom | 6 |
| Living-room-bedroom combined | 1 |
| Kitchen | 4 |
| Oven | 1 |
| | 37 |

Not infrequently, the corn is simply dumped on the floor of the house and ears removed as needed. However, it is preferable to place it on a platform raised at least a few centimeters above the ground; "otherwise, a snake may get into the maize, looking for rats." Forked sticks are sunk into the earth floor, and their crotches support a floor of closely spaced poles or halved bamboos. Ordinarily, such floors are about 25 cm. above the ground; that shown in plate 17, *d*, is higher than usual, being approximately 70 cm.

When maize is stored within the dwelling, one or more of the house walls form the walls of the crib. In plate 17, *d*, a partition which divides the house into two rooms serves as the back wall of the granary; at the far left (not visible) it is bounded by one of the main walls of the house. In this particular case, the maize has been piled neatly across the front of the "bin"—entire ears, not husked, are laid horizontally, butt ends outward. The front "wall" of the crib is formed by a double course of maize thus stacked; behind, the ears are tossed in, helter-skelter.

This technique is not usual, and the corn generally is held within the granary by a movable wall which consists of horizontal bamboos, or small poles, stacked one above the other. At each end, the horizontals are held in place between two closely spaced vertical posts set in the ground. As the supply of corn diminishes, the upper poles are removed, and the wall accordingly lowered. With such an arrangement, it is not necessary to stack the ears with care, as must be done if the whole front is open.

Even when the granary is a separate building, it still preserves most of the features described above. The walls of the hut usually form three walls of the crib, and the front wall is movable (pl. 17, *c*). Generally, the roof is thatched, with two sheds, and the walls are of split bamboo (pl. 17, *c*). Occasionally, a granary is built of squared timbers and topped with a tiled roof (pl. 17, *f*).

### PIGPEN

In some cases, a shelter for a pig is indistinguishable from a granary, although the latter generally is better built (cf. pl. 17, *c*, *e*). Some families use the same hut alternately for both purposes. In any case, the doorway is closed by a series of horizontal poles or bamboos, held in place between two sets of vertical posts (pl. 17, *e*), just as is the movable wall of the granary. Sometimes, the hog shelter consists merely of a pen, covered by a thatched roof.

### LAUNDRY

The laundry is an adjunct of virtually every house. It consists of a plank, or of a series of horizontal poles, supported on a forked stick frame (pl. 18, *a*, *d*, *e*). On this approximation of a table rests the large, oval, wooden tray in which actual washing is done. Nearby are the pottery jars which contain both plain and lye-water, and from which the woman dips the liquid as needed. Discarded water is thrown from the tray at any nearby point; sometimes a shallow channel is dug to carry it a short distance, since otherwise the ground becomes soggy.

The laundry table may be set up under a tree near the dwelling; if no tree provides shade, a simple roof, of one or two sheds, supported by a forked stick frame, is built over the table to give protection from sun and rain. Similar laundry facilities appear to be common in the Huasteca and probably also among the Maya (Wauchope, p. 138).

### ROOFED SHELTERS

A simple thatched roof, ordinarily of two sheds, gives protection to a variety of domestic equipment. Such a roof often is built over the sweathouse or over the laundry table (pls. 16, *a*, *b*, 18, *a*, *e*). One covers the "oven" in which chili is dried; another, the "oven" over which cane juice is boiled to produce brown sugar (pl. 8, *f*). The bake oven, too, is similarly protected, provided it is in the patio of the house and not in the kitchen.

The sugar mill, of wood or of metal, invariably

stands in the open. Because a considerable area is required for the circuit of the animal which provides traction, it is not feasible to roof the mill. When not in use, it may be covered with a scrap of sheet iron or an old mat.

### FENCES

Fencing is rare, except in the *fundo legal*. Of our 39 families of the census, 11 have enclosures of one sort or another; 3 are of poles, 8 of bamboo, 1 of barbed wire. Even in the *fundo*, the entire lot seldom is fenced; although occasionally the frontage on the "street" is so treated. But by and large, in the *fundo* and on outlying parcels, fences are built to protect small garden plots from damage by animals.

A fence usually consists of a series of spaced posts set in the ground and connected by a single line of horizontal poles near the top, and another near the ground. Uprights, of light poles or bamboo splints, are lashed to the horizontals with liana, in wrapped twine stitch (pl. 18, *g*). In one case, split wood serves as the uprights (pl. 18, *f*); in another, a temporary fence has been built of crushed cane stalks, supported between two horizontal poles which are lashed to uprights.

Other fences seldom are seen. One field, near the *fundo*, is bounded by *monte* on three sides; along its open frontage is a series of posts, to which horizontal poles have been lashed; no upright fillers are used (pl. 7, *e*). This casual fencing protects the maize from passing horses and mules. A similar fence is used to form a corral for pack and riding animals, but such enclosures are rare.

Sometimes, small branches of *chaca* (No. 228) or *muite* (No. 123) are planted at spaced intervals along property lines, and, as they take root, they form a hedge.

### THE MÉNAGE AS A WHOLE

Many Totonac families live in a single house, but generally all who can afford it occupy several distinct structures. The relative location of the buildings of each family of the *fundo legal* is evident in map 7, and figures 32 and 33 give a good idea of furniture arrangement in individual rooms.

However, it seems desirable to present a more complete picture, which will indicate how the various elements—buildings and furnishings—are combined. Accordingly, map 9 is a detailed sketch, to scale, of the domestic arrangements of

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*Legend to map 9*

A typical ménage, that of Pablo González.

Vegetation in the house clearing is numbered (see key on sketch); in the present paragraph, numbers in parentheses refer to Appendix C. Trees and shrubs, cultivated for fruit: 1, avocado; 2, guava (No. 326); 3, *lima* (probably *Citrus limetta* Risso); 4, lime; 5, orange; 6, grafted orange; 7, physic nut (No. 192); 8, banana (within fenced enclosure); 9, citron, 10, tree gourd (No. 300). Other trees and shrubs, not cultivated: 11, *zapote chico* (No. 191); 12, *capulín* (Nos. 21, 41; or 85); 13, *estribillo* (No. 61); 14, castor (*higuerilla blanca*, No. 250); 15, *moral* (No. 324); 16, tree, kind not noted. Ornamental plants, cultivated: 17, *Cuernavaca*, a shrub; 18, *flor de mayo* (No. 151); 19, mock orange (*limonaria*); 20, lilies (*lirios*); 21, rosebushes (*rosales*); 22, hibiscus (*tulipán*); 23, small flowering plants of various kinds (periwinkle, etc.). Note the number and variety of plants, mostly cultivated, which adorn the patio. Note also the abundance of clay pots, strewn here and there, and represented by an open circle, not numbered.

Structures are indicated by letter: *a*, laundry; *b*, water supply; *c*, kitchen; *d*, living room; *e*, *f*, bedrooms; *g*, hog shelter; *h*, poultry house. All buildings have earth floors.

*a*. Laundry (pl. 18, *e*). Four forked posts provide a frame for seven horizontal poles, which form a table top. On t is a large, oval cedar tray and a gourd, cut lengthwise, to form a dipper.

Over the laundry table is a triangular roof of *palma redonda*, resting on a frame of three forked sticks. The roof has a slight pitch and drains to the south. An empty clay jar stands at the base of one of the forked posts.

Extending east of the laundry table is a line of upright stones, set casually in the ground, to curb erosion. A similar line runs parallel, a meter or so the north. A third line extends west, from the laundry table to the kitchen, bounded on the north side by a row of lilies. Flat stepping stones run from the laundry table to the nearby enclosure where water is stored.

*b*. Water supply (pl. 13, *b*). A quadrilateral, not rectangular, enclosure surrounds the jars containing water. At the east end of the north wall, a break provides an entrance. The enclosure consists of a post at each corner, connected by a single horizontal bar on each side. On the inside of the latter, small upright poles are stuck in the ground, close to one another, and with liana are affixed to the bar, in wrapped twine. At the moment, the fence is in need of repair.

On the outside of the east side of the fence sits an empty clay pot. Another, on the ground within the enclosure, near the southwest corner, contains water. So also do the three clay pots in the northwest corner. They are deeply embedded in ash (represented by a wavy line), a relic of past lye-water. As the ash loses its efficacy, it is removed from the jar and thrown against the exterior, while a new mixture of ash and water is prepared.

*Legend to map 9*—Continued

*c.* Kitchen (pls. 12, *d*; 13, *a*, *c*, *d*). Walls are of upright poles; the recently repaired roof, of *palma redonda* (pl. 12, *d*). The north end of the structure is essentially a lean-to extension (indicated by a broken line), and a solid black circle in the center of the house, toward the north end, represents a supporting post. The building has two plank doors, toward the south end of the east and west walls respectively. Against the east wall, just south of the door, a vertical post has been set in the ground, outside the kitchen, and between it and the wall firewood is stacked (pl. 13, *c*).

On the out-side of the east wall of the kitchen and at right angles to it, is a table (1) of seven split bamboos, which rest on a forked stick frame (pl. 13, *d*, extreme right). On this dishes are washed. On top of the table are an inverted clay jar, a tree gourd, and two sizable pottery bowls, one containing water. On the ground, immediately to the east, is a clay jar, whose mouth is covered by a leaf of *palma redonda*. Along the south side of the table and leading from it to the kitchen door, is a series of stepping stones.

Against the outside of the east wall of the kitchen, a forked stick frame (2) supports seven long, horizontal poles, which form a shelf on which clay cooking vessels not actually in use are inverted (pl. 13, *d*). Further vessels are stored beneath the shelf, on horizontal poles, which rest on several flat stones.

Inside the kitchen, against the south wall, is a frame or stand (3) for water jars. It consists of two shelves, each of a thick cedar plank; unlike most of the frames, the supports are of dressed cedar, not of bamboo. Four glazed water jars, made in Zacatlán, and purchased locally from itinerant vendors, sit on the upper shelf. On the lower, is a clay pot, of a type presumably manufactured in Huejutla, Hidalgo, and occasionally sold in Papantla. The mouth of one jar is covered by a wooden, paddle-shaped cover (cf. fig. 37, *a*); the others, by gourds. In addition, assorted oddments—a bit of maize, some coriander, chili, and so on—are stored on the lower shelf.

The southeast corner of the kitchen is given over to a large cane cage (4) made by the son of the family; it contains doves (*palomas*), which will be eaten at some future date.

Just inside the west door is a low, straight chair (5), with seat of woven palm; beside it is a small cedar stool (not numbered) (fig. 28, *b*). A low cedar table (6) is in the center of the kitchen, just north of the doors; it is moved about at will, and when the photograph for plate 12, *d* was taken, it stood between the two doorways.

Against the east wall, just north of the door, stands a broom, represented by a black dot. On the earth floor, also against the east wall, are three hearths (7), each formed by three inverted clay pots, which function as firedogs. On these hearths, *nixtamal* is prepared; since the family is large, food is consumed in quantity. Above the middle hearth hangs a large frame (8) used for food storage; it consists of light poles, lashed to a crosspiece at each end (cf. fig. 25, *d*, *e*).

The raised hearth (9) is in the northeast corner of the kitchen. Unlike its counterparts in most houses, the supporting frame is of trimmed cedar posts. They maintain a series of closely spaced poles, covered with a thick coating of mud plaster. At the west end is a raised, horseshoe-shaped *hornilla* for the baking plate; at the opposite end, three inverted pots form a small hearth. On the floor, west of the raised hearth, and against the north wall, are two large clay jars.

A low platform table (10) consists of planks resting on a forked-stick frame; when there is no space at the main grinding table (12), this stand is used. In front, a length of bamboo (not shown) is set into the floor, its top flush with the planks, and its cavity receives the foot of a metate. A large, nearly circular, hanging frame (11) (cf. pl. 22, *d*) is swung from the rafters adjacent to this platform table.

The grinding table (12) consists of two thick cedar planks which sit on a frame of squared cedar uprights set into the floor. On it are four metates, and in front of each, an upright bamboo to receive the foot of the handmill. The grinding table appears in plate 13, *a*, but since a year has lapsed between the photograph and the sketch, kitchen furniture has been somewhat altered. In the plate, the fourth metate, at the far end, is not visible, and the auxiliary grinding table has not yet been installed. Moreover, on the floor, against the north wall, is to be seen a large cooking jar, reposing on firedogs. In addition, the photograph gives an idea of the abundance of equipment hung from the poles of the walls which, for obvious reasons, could not be indicated in a small-scale drawing.

Between the grinding table and the door is another piece of kitchen furniture (13) which, through oversight, was not identified in our notes.

On the outside of the south wall of the kitchen, three clay pots sit on the ground. A series of paving stones runs from the west door, to connect with the slab pavement along the north side of the living room (*d*). Between the latter and the kitchen is a north-south line of stones, set vertically, presumably to curb erosion from the run-off of the living room roof.

*d.* The living room is a separate building which also functions as a dormitory for the daughters of the family, who sleep on woven mats spread at night on the earth floor. Squared cedar posts and beams form the frame of the building; in part, the walls are of upright poles, in part of split cedar, which has been roughly worked. The butts do not rest directly on the ground, but on a series of stone slabs. With wire, these uprights are lashed to three horizontal cross poles, roughly squared. Doors are of planks; the roof is tile, with two sheds.

A stone pavement runs along the north and south walls of the living room, and odd stones have been placed on the ground at the east and west ends, where the drip from the roof falls.

Inside the living room, ample storage space is provided by cedar planks laid across the rafters. More planks (1) are piled high against the south wall, and above them a trombone is hung. Cedar cut for roof poles (2) is stacked to a height of 2 m. against the inside of the west wall. In front of it is a long cedar bench (3), with a companion table (4) of the same wood. Guests are served at this table which, at the time of our visit, harbors an assortment of belongings, including a violin and several gourd vessels. From the rafters, over the table, are festoons of dried garlic, as well as a wooden fork, which sports a straw hat, a maguey fiber shoulder bag, and a brass trumpet. On the adjacent wall are hung a quirt, another maguey bag, and several straw hats. Northwest of the cedar bench (3) is a home-made bamboo stepladder (5), hidden from view when the door is open.

*Legend to map 9*—Continued

Against the north wall, just east of the door, is another long cedar bench (6). Above the latter, and crossing it diagonally, is a pole suspended from the rafters. On this, clothing is hung, for, owing to the humidity, it cannot be left long in storage.

Just south of the bench (6) stands a bass viol (7), in its case. The profusion of instruments makes it scarcely necessary to explain that Don Pablo is a musician.

In the northeast corner of the room, a chest of cedar (8) rests on a trestle of slats, supported by four forked sticks set in the ground. A nineteenth-century trunk (9) reposes on a similar frame, in the southeast corner of the room. Beneath it is a defunct charcoal iron; upon another occasion (pl. 15, *b*), a wooden tray leans against the trestle. The chest and trunks are used for storage of clothing, finery, land titles, and so on.

The dominant piece of furniture against the east wall is the family altar (10) (pl. 15, *b*). It consists of a crude table of planks, resting on squared cedar uprights, and covered by a cotton cloth, printed in a red and blue all-over design. On top of the table are placed three low boxes, the flanking ones covered with white cotton cloth, the center one, with red. The latter also bears two small bunches of artificial flowers. Each box supports the image of a saint and raises it slightly above table height. The northernmost one holds a print of the Virgin of Guadalupe; the center one, a print of the Sacred Heart of Jesus; and the southernmost box, a three-dimensional figure of St. Anthony. All these images are housed in cedar shadow boxes, highly varnished.

On the main altar table, and leaning against each of the three boxes, are three framed images of the Virgin of Guadalupe. Four bouquets of mixed garden flowers, mostly mock orange, also adorn the main table. Beneath the latter, and hidden from public view by the cloth covering, are stored old bottles, both empty and full, extra dishes, and a great assortment of domestic equipment, mostly demised, and none of it in active use.

As usual, the altar is framed by a canopy. Four squared uprights are set in the ground, one at each corner of the table; their tops are tied to the rafters. Across the front, and at either side, a pliable sapling is bent to form an arch and each end is tied to one of the corner posts. Panels of colored tissue paper cover the area above the arch, and further decoration is supplied by metallic paper ornaments pasted to the tissue paper. A cut-out paper border covers the sapling, and a large paper bow conceals its junction with the posts. Immediately behind the altar, the wall is covered with a cloth; and, at each side, behind the flanking chests, lurid motion picture posters adorn the wall.

In front of the altar, and somewhat to the south, stands a round pedestal table (11). Its top is attached to a squared cedar post, to each side of which a small cedar slat has been nailed, to serve as a foot (pl. 15, *b*). The table bears a vase of garden flowers, a home-made pottery candlestick, a tree gourd containing copal incense, and a commercial *veladora* (vigil light). On the floor, beneath the table, is another charcoal iron, and to one side (not numbered in sketch), a home-made incense burner. Upon another occasion, the altar and table were photographed (pl. 15, *b*), at which time most of these items had been removed.

An empty wooden box (12) stands casually in the center of the living room, and between it and the south door are three low, straight chairs (13).

*e.* Southwest of the living room is a nearly square building (pl. 9, *b*), regarded as the bedroom of the sons of the family; upon occasion, it also is used for maize storage, and in it are concentrated the pottery-making activities (pl. 24, *h*) of the women. The walls are of upright poles and split rails; the door, of bamboo splints (pl. 12, *b*). In front of the latter, a stone is set flush in the ground, as a doorstep.

Inside, there is a partition formed by vertical poles, the area north of which sometimes is used as a maize crib. In the southern half of the room, a large table (1) stands diagonally, and a bench (2) is placed against the east wall. On this the eldest son sleeps, while the other boys occupy mats spread on the floor. At the time our description was written, there was no platform bed, but upon another occasion, the same room was photographed and was so equipped (pl. 24, *h*). Four pottery jars sit on the floor against the west wall; old shoes and discarded clothing also are strewn on the floor. Running diagonally from the partition to the north wall are two ropes (*mecates*) on which clothing is hung to air.

*f.* The "master bedroom" is, at the same time, the principal granary. Walls and door are of light, upright poles, lashed with liana. The roof, of *palma redonda*, has two long sheds and, at each end, a short one (*culata*). A few stones are on the ground in front of the entrance, and there are more along the outside of the north and west walls. Large clay jars (represented by open circles, not numbered) are liberally distributed about the exterior. Of the two inside, one, whose mouth is covered with leaves, contains a moist clay, to be used in pottery manufacture.

The furnishings are simple. The east half of the building functions as a granary (1). Forked posts are set into the ground, and poles placed in their crotches; on them rest a series of north-south poles which form the floor of the crib, a few centimeters above the ground. Its front wall is movable; others are formed by the walls of the building. Just west of the granary is a low platform bed (2). To the rafters are tied ropes on which clothing is hung. Two small pigs tethered in the southwest corner share the bedroom with Don Pablo and his wife.

*g.* A pig shelter stands on the southern fringes of the clearing; immediately south of it, the land dips abruptly and its slopes are *monte*-covered. Originally, the shelter consisted of a gable roof of *palma redonda*, supported on a four-post frame. Later, an extension (shown by dotted line) to the west was added by setting up additional posts, and over these a roof of single shed was built. The shelter is innocent of walls, except in the northwest corner, where there are four cribbed poles on two sides; manifestly, this is of doubtful utility for, at present, the other sides are not fenced.

*h.* The poultry house (pl. 17, *b*) is somewhat removed from the other buildings. It is constructed on a frame of four forked posts; walls are of upright poles, lashed to a single cross piece on each wall. The *palma redonda* roof is of a single shed and drains to the northwest. A standing wooden slab closes the entrance.

Pablo González, whose ménage probably is representative of a family in comparatively comfortable circumstances. Vegetation in the patio or house clearing is indicated, as are the various structures and their furnishings. Don Pablo has no sweathouse, no oven, and no mill for cane; but his establishment boasts a kitchen, living room, and two separate bedrooms, plus the ubiquitous laundry, and a poultry house and hog shelter. The figure is accompanied by a detailed description, in which reference is made to a number of photographs which complement the account.

The household is situated on a slight east-west hogback, in the northern half of parcel 115. To the south, there is a relatively abrupt drop, and here *monte* begins; to the north, the land slopes gently toward the family's maize and cane fields, hidden from view by a narrow strip of *monte*. The house clearing continues somewhat farther west than we have shown, where formerly were located several buildings belonging to the previous owners of the parcel. To the east, clearing and property lines coincide and are marked by a long row of handsome *chaca* trees (No. 228).

### SPECIAL ARRANGEMENTS FOR FESTIVALS

From time to time, virtually every Totonac household is under obligation to receive numerous guests (p. 173). At a really large feast, a hundred guests, or even two hundred, are by no means uncommon, and the problem of preparing food for so many people is, quite obviously, a severe strain on kitchen facilities. Under ordinary circumstances, the kitchen, with its small platform hearth, its few metates and water jars, its limited number of cooking vessels and dishes, is quite inadequate, and most of the preparations are made out of doors, in the clearing adjacent to the kitchen.

We had opportunity to witness the makeshift kitchen arrangements for several festivals. An account of two, given below, will give some idea of the way in which the problem is met.

Eighty days following the death of an individual, the family ordinarily gives a large feast. We were fortunate enough to be invited to one at the house of Agustín Méndez:

Most of the preparations have been made in the patio adjoining the kitchen on the east and north. Immediately outside the east door of the kitchen is a large copper cauldron, ordinarily used to prepare brown sugar; today, it is filled with water, so that the cooks may have an adequate supply. From time to time, several girls go to fetch more water, each carrying a jar. They cross the main patio of the house, in front of the "parlor," where the male guests are assembled; they go and return, single file, very self-consciously, without a glance to the right or the left.

A few steps in front of the kitchen door, and to one side, are two very large, home-made jars, containing the *bollitos de anis* (p. 153). They rest on firedogs (pl. 19, *a*), having one large stone in common, and each vessel is further supported by two inverted clay pots. Each of the large jars is covered by a shallow gourd container, convex side up.

Beyond is a table, at which several women are preparing tamales. They cut leaves for the wrapping, as needed, from nearby banana trees. Each leaf is opened at the tip and is torn down the vein, then the halves are cut in suitable lengths.

A few meters to the north is a thatched roof, under which brown sugar generally is prepared. Today, the "oven" for boiling the cane juice is not in use. But a great copper cauldron is filled to the brim with tamales. It is raised above the fire by a pole thrust horizontally through its two rim handles; one end is tied securely to a post of the roof; the other rests in the fork of an upright stick, evidently set up for the occasion.

Beneath the same thatched roof is a large clay pot in which the atole is being cooked. It sits on three small inverted pots, which serve as firedogs. The atole is stirred constantly with a long stick (fig. 36), and the woman in charge of this operation has her organdy skirt and her apron tucked between her knees, in the hope of not soiling them.

Along the east side of the same shelter, further preparations are under way. A clay baking plate, resting on three stones, is being used to toast the *totopos* (p. 155), and along with the latter, small cakes of chocolate are being softened before they are tossed into a nearby pot, where the chocolate is being beaten with a home-made apparatus (pl. 20, *a;* fig. 29, *a*).

The kitchen itself is not deserted, but it is the scene of less activity. On the grinding table along the north wall are five metates, one of which is upended and evidently has not been used. The bulk of the grinding, of course, has been completed long before the guests arrive. On the floor just inside the kitchen door is a large baking plate, on which tortillas are being cooked.

The food is served principally from the thatched roof shelter where ordinarily cane juice is boiled. Not only guests are provided generously, but gift lots of food are prepared, to be sent to various houses. It is said that some is sent every family whose members attended the wake, even if none presents himself at the feast of the eightieth day. Various men leave the shelter, carrying tamales and *totopos* in fiber bags, and atole, with chocolate foam on top, in new pottery pitchers, purchased for the occasion in Papantla. One man, almost more in evidence than the host, is said to be particularly eager to assist,

because 2 years ago this family had been especially helpful when his own daughter died.

The men, and a very few of the women guests, are served in relays at a large table set in the "parlor." When these special guests have finished, the table is moved into the patio behind the kitchen, where most of the women eat—both guests and those who have come to assist with the cooking.

After they have finished eating, the women wash the dishes, rather casually, in wooden trays, scrubbing them with leaves pulled from a great spray of pulúš (No. 3) hung on the outside wall of the kitchen. One woman collects the banana leaves left from the consumed tamales and tosses them into the brush, beyond the house clearing. Another remains beneath the thatched roof all the time—for if the kettles are left unattended, the dogs are likely to sample the food. From time to time, she heaves a stone at a thin hound which ventures near. The dogs are ubiquitous, and, once in a while, a woman tosses a couple of *tamales* or odd scraps to them.

As a guess, at least 25 women are milling about in the kitchen and adjacent patio. But not all the women go through the motions of working. Some sit on a few piled logs and chat; others merely stand and watch. However, all the women of the Méndez family are active participants, as well as a considerable number of nonrelatives.

Naturally, a festival of this size requires good organization, but even so, it is surprising how well the informal cooking arrangements function. There is no confusion; food is ready on time; it is tasty; and it is well served. Of course, a considerable part of the equipment has been borrowed for the occasion. Probably some of the metates, for example, have been lent, for few families have more than three for personal use. Perhaps 25 cooking pots are involved in the preparation of the food, and some of these have been borrowed. Shortly after we arrive, one of the girls goes to the nearby house of the brother of the host and returns with an additional cooking jar. In this particular case, the copper cauldrons probably belong to the host, for he has a sugar mill and makes considerable brown sugar. But a family without a cauldron may borrow or rent one for the feast.

We also had opportunity to view cooking arrangements at the house of Mauro Pérez, when a large number of guests assembled in honor of the visiting image of St. Joseph:

As a matter of fact, several adjacent houses of different members of the Pérez family have been thrown open. In the "parlor" of Don Mauro, the saint is installed on the domestic shrine. In the kitchen, about 10 women are making tortillas; in that of his brother, Ceferino Pérez, several more are similarly engaged. The *nixtamal* has been prepared outside, in a large copper cauldron, about half way between the two kitchens. Another copper cauldron outside the door of the kitchen of Don Mauro is filled with water.

Camp fires are made in the shade of a large roof (pl. 19, *b*), erected especially for the occasion. There is a large home-made pottery pot, containing turkey *mole*, another with beans, and still another with coffee. All rest on inverted pots which function as firedogs. To one side is the copper cauldron with the *nixtamal*.

Earlier, the hostess, who is one of the few in Tajín who has an oven and who knows how to make bread, has baked. In the morning guests are served bread and coffee. At noon, they are given *mole*, beans, tortillas, and coffee. Tables have been set out of doors and here the guests eat.

Virtually all the female members of the Pérez family, as well as a great many neighbor women, assist actively. All work amiably and seem neither rushed nor dismayed by the volume of guests.

After the horde of visitors has been fed, and after the cooks have had opportunity to eat, scraps are scraped from the plates with bits of tortillas and are fed to the dogs. At least a dozen are underfoot. Dishes then are stacked. They are washed first in the water from the *nixtamal* and are rubbed vigorously with pulúš leaves, later being rinsed with clear water.

## TECHNOLOGY [20]

Without doubt, the Totonac were far better artisans at the time of the Conquest than they are today. The old chronicles bear evidence not only of their skill as builders, but there is also mention of metal artifacts, stone mosaics, wood carving, fine weaving, and featherwork. Archeological finds in sixteenth-century "Cempoala" likewise attest Totonac competence, both in architecture and in ceramics (García Payón, 1949, *a*, *b*, *c*).

Today, almost every Totonac woman in Tajín is her own potter, but her ceramics are execrable. A few women, most of them elderly, still weave on the belt loom, and some of the cotton textiles are of good quality. Every man knows how to tie an assortment of knots, and a good many know how to weave simple articles, such as the palm ornaments used for altar decoration. Some braid fiber to make a carrying strap and fill wooden frames with a coil without foundation, to form cradles and hanging frames for the storage of kitchen supplies. Among them are good craftsmen with real pride in workmanship. But the fine skills which apparently characterized Totonac culture at the time of the Conquest are now a thing of the past.

### WOODWORKING

There is scant mention of Totonac work in wood at the time of the Conquest, but casual references

[20] A number in parentheses following the name of a plant refers to our herbarium catalog in Appendix C.

indicate that this art was not lacking. For example, there is mention of canoes near "Cempoala" (Díaz del Castillo 1:168; Solís, pp. 96–97).[21] Moreover, we know that the priests of "Cempoala" stored excess food in boxes of "thin boards" and that certain sacrificial victims carried thick staves, carved to represent snakes and different kinds of birds (Las Casas, pp. 461, 463). Since in "Cempoala" the Spaniards burned the native idols (Díaz del Castillo 1:190–191), it seems likely that they were of wood. There is specific mention of at least one wooden idol in human form (Las Casas, p. 462).

Today, woodworking is at a minimum. The Totonac are far from expert at lumbering, despite the fact that they live in an area which formerly, at least, abounded in precious woods. It has been mentioned previously (p. 72) that very few men in Tajín are able to saw planks or beams, and that reliance is placed on itinerant workers from outside. Some thirteen or fourteen years ago, an enterprising Tajín citizen set up a little business, buying trees and selling the sawn lumber; but he relied exclusively on workmen from the highlands.

Two men in Tajín pass as carpenters, although they are primarily maize farmers. Both Totonac, one is a native of Tajín, the other, of nearby Escolín. They have a modest stock of European tools and one, at least, understands the use of a level. For the most part, the male populace at large has not the slightest notion how to manipulate a saw or a plane. All are skilled, however, in handling the machete, and with it can make a cut about as clean as that of a saw.

Local carpenters undertake to make tables, chairs, and benches. It is possible that they also make wooden storage chests, but specimens of the latter which we have seen appear to be nineteenth-century relics. Carpenters also make the crosses used as grave markers and the cedar frames, or shadow boxes (pl. 15, *b*) in which images of Christian saints are housed. One carpenter professes skill in producing saddle trees, but most Totonac feel that it is wiser to buy in Papantla. On the whole, Tajín carpentry is both poor and expensive, and it is preferable to bring in a professional from Papantla when special work is to be done.

[21] The type of canoe is not indicated, but we may guess that dugouts are involved since nearby, opposite San Juan de Ulúa, there is mention of canoes of "one piece" (Gayangos, p. 43).

Woodworking is not confined to those who consider themselves carpenters. Perhaps eight or ten men know how to make straight chairs with woven palm seats, and several produce, for sale, wooden mills in which cane is crushed. The latter are of hardwood and involve considerable precision, inasmuch as the cogs must engage; the current price of these mills for labor alone is $100 pesos.

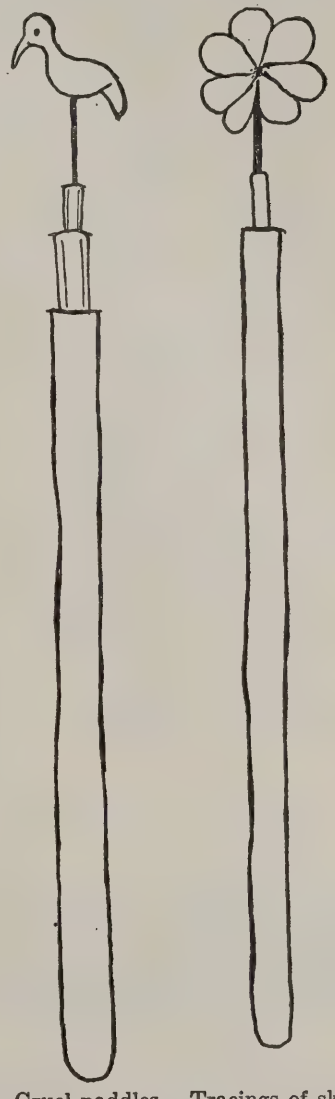

FIGURE 35.—Gruel paddles. Tracings of sketches drawn by Modesto González; not to scale.

A wooden paddle (*chamalote*; lí·ltɔkɔ, ʔ), usu- of *zapote chico*, is used in many kitchens for stirring maize gruel. Some sticks are relatively plain (fig. 36, *e*); others are ornamentally carved (figs. 35, 36, *a–d*). These generally are made by the individual householder, as is other simple kitchen

equipment, such as a wooden cover for water jars (fig. 37, *a*), or a stand for a petroleum lamp (fig. 37, *b*). The former is cut to fit the mouth of the jar, and a short stub protrudes as a handle.

More elaborate wooden articles are produced for special occasions. Either a carpenter or a nonprofessional may make the hinged wooden puppet (pl. 23) which is associated with Christmas festivities. Wooden masks (pl. 22, *a*, *c*, *e*), of cedar, are used by the various dance groups; at present, in Tajín, only Donato Santes attempts to make them. Upon request, he also produces a jointed wooden snake used by the Negrito dancers.

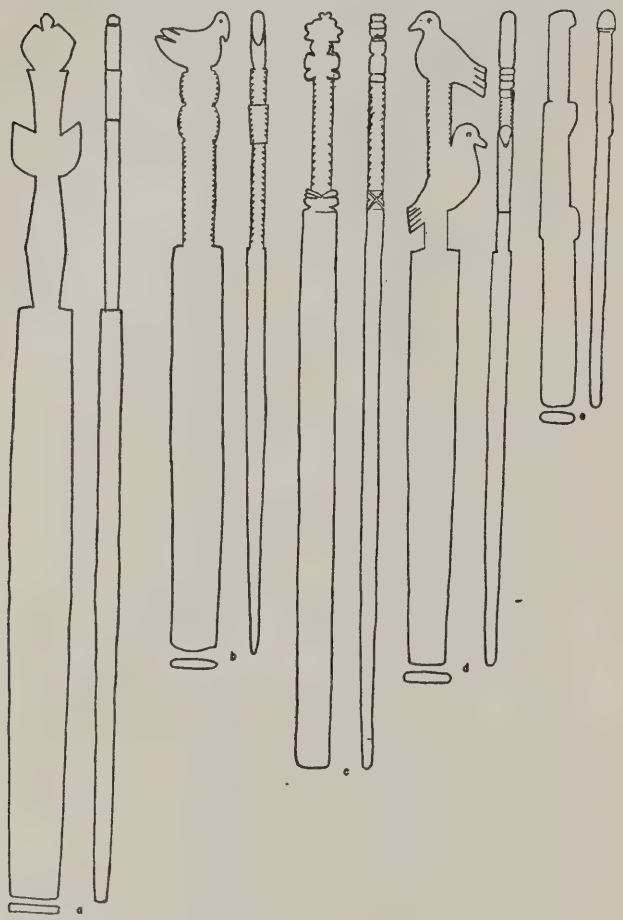

FIGURE 36.—Gruel paddles. *a*, *b*, *d*, Models made by Donato Santes; *c*, redrawn from field sketch of stirring stick used by Felipa García, likewise made by Donato Santes; *e*, used paddle purchased from Luarda García. All of *zapote chico* wood. Length of *a*, 95.5 cm.; others, same scale.

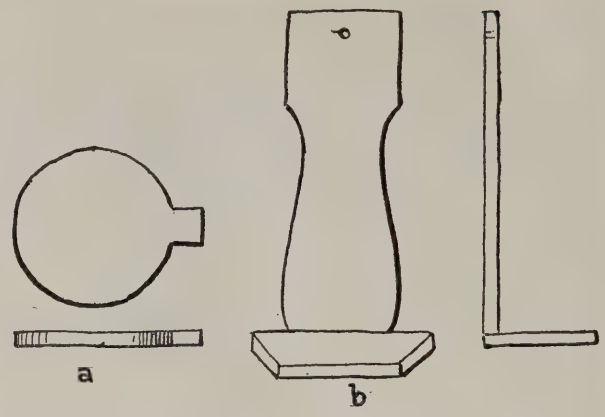


FIGURE 37.—Wooden pot cover, lamp stand. Both from wood of commercial boxes. *a*, Sketched in the house of Lorenzo Xochigua; *b*, in house of Augustina Méndez. Not to scale.

Every household has a series of wooden trays (*bateas*). A large oval one (fig. 38) is used in laundering; a smaller, circular one (pl. 21, *a*, *b*) has many uses, but most often is the container in which the Totonac woman carries burdens on her head. To us, the circular trays appear to be roughly the same size, and some claim that all have a capacity of 12 liters; however, others say that size varies.

Cedar (No. 219) is preferred for these trays. Occasionally, one is made of *frijollo* (No. 193); and some are of mahogany (No. 194), "but they are no good. They retain the moisture and never dry; they are heavy and of little use." Now that cedar is scarce in Tajín, few trays are manufactured there. The supply comes chiefly from other settlements, where *monte alto* still is abundant—Plan de Hidalgo, Plan de Palmar, Furbero, Jorge Cerdán, and other small communities to the west. We met one man from Agua Fría, en route to Papantla, where he expected to find a ready market for an assortment of trays with which he had two pack animals loaded.

Apparently anyone who has the necessary wood is considered competent to make a tray. The tree is felled and a block the necessary size is hacked from the lower part of the trunk. A sizeable cedar may yield three or four circular trays; for the larger oval *batea*, a tree with a diameter of at least 24 inches is required. One of the local carpenters says that for a circular tray he uses a compass; a straight adz, to shape the exterior; and a curved adz for the interior.

The oval tray is unadorned (fig. 38) and is simply gouged out of the block of wood. Circular trays are of two kinds: shell (*concha*) and ribbed (*de costilla*). The former (pl. 21, *a*, *b*) has a smooth surface; the latter, vertical channels, cut with a chisel, at spaced intervals on the exterior wall, sometimes with corresponding ridges on the interior.

Some of the ribbed trays have half the rim cut away, so that the surface is in two levels; decorative notching of such a rim is common. It is said that formerly even the oval tray had a "double" rim, because it is less likely to crack with use.

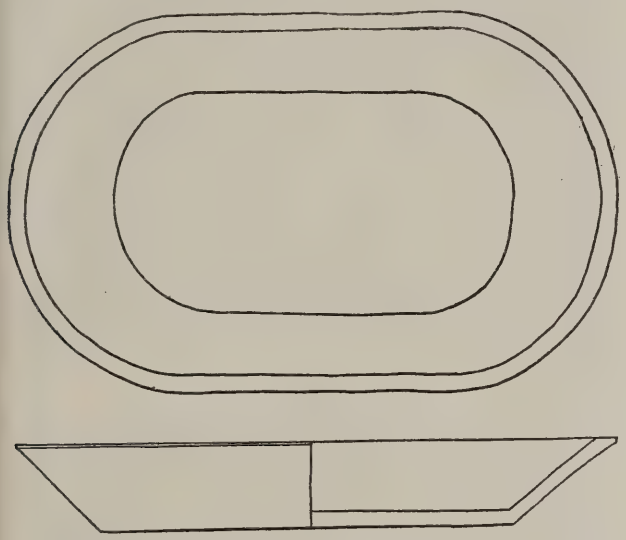

FIGURE 38.—Cedar laundry tray. Made in Agua Fría, for sale in Papantla. Long diameter, 80 cm.

Painted decoration is confined to circular trays. Occasionally, someone in Tajín tries his hand, but most trays are taken to Papantla, to be painted by one Luciano Cano, a native of Chicontepec. He is a job printer and, on the side, does a sprightly business decorating trays and calabashes for the Totonac trade. With cheap oil paint, he coats the exterior with red or orange, and over that, applies gay, polychrome designs. The Totonac provides the tray and Don Luciano, the paint and the labor; his current charge is $8.00 pesos.

A painted tray figures prominently among the wedding gifts which the bride's parents request from the family of the groom. Such trays are cherished, and in the course of 8 months in Tajín, we were able to purchase only two specimens.

A container similar to the trays, in that it is excavated from a single block of wood, seems to have been current in former times. We have seen three fragments, called *canoas*. They are large, deep, and oval; at least one had a lug at either end. Use seems to have varied. One is said to have caught the juice from the sugarcane, as the latter went through the mill; another is said formerly to have been used in making some kind of "wine"; and the third contained salt for cattle, in the days when Tajín was supplied with stock. Its owner, however, came originally from Hidalgo, and informants believe he introduced the idea of using a wooden dugout for salt.

Another wooden artifact, now no longer to be seen, is an ox yoke, used in crushing cane. We saw one rotted fragment but do not know how general was the use of the yoke or, for that matter the use of oxen with the sugar mill.

A modern touch is provided by the manufacture of baseball bats. Some years ago, two brothers, who are not carpenters, started to make bats for sale, using the wood of the *chote*, *palo de rosa*, or *palo blanco* (Nos. 10, 171, 342). Their first products, based on a model manufactured in the United States, were shaped with a machete and a plane. Later, a professional carpenter from outside, engaged to install shutters in the Tajín school, assisted them in setting up a lathe. They still produce bats on a small scale and have sold them for $8.00 pesos apiece in Poza Rica, Poza Larga, and Papantla; they speak of looking for a market in Mexico City.

## GOURDS AND CALABASHES

We have found no early reference to decorated gourds or calabashes among the Totonac, although Mexican sources suggest that such manufactures were current in the nearby Huasteca. There is, for example, one mention of a yellow material with which "they anoint and dye gourds (*jícaras*)"; and upon another occasion, the vanquished Huasteca offered the Mexicans "large worked gourds" (*xícaras grandes labradas*) (Tezozomoc, pp. 110, 296). In any case, there is no evidence of lacquer or near-lacquer as a native craft among the Totonac, although possibly the trays and calabashes, now painted in Papantla for Totonac trade, may represent a weak and altered survival of an old art.

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The fruit of both the cultivated gourd vine (p. 137) and the calabash tree (no. 300) is used extensively in Tajín, following very simple preparation.

A gourd is picked green and is allowed to dry before it is cut to form the desired receptacle. The vine produces fruit of three forms (p. 137). One, banjo-shaped, is divided longitudinally with a knife, and two large spoons or dippers result. The elongated, necked form sometimes is used as a water container. A cut is made at the top, near the peduncle; water and small stones are dropped in; and the fruit is shaken violently. This treatment is repeated several times, until the water runs clear, following which the vessel is ready for use. A globular fruit may be cut transversely, to form a plate or open bowl. Such gourds are general utility containers in every Totonac kitchen; often, they also function as pot covers. With the section adjacent to the stem sliced off, the globular gourd forms a receptacle in which hot tortillas are served. A gourd of similar shape, with a hole hacked in one side, and with two perforations for suspension from the waist, is used to collect weeds in the milpa. Formerly, seed for planting was carried to the field in such a container. In no case is the fruit of the gourd vine decorated.

Some calabash trees produce globular fruit, some, elongated. The former is cut transversely in half. At times the flesh is allowed to rot; at times it is not removed, and the half fruit is boiled at once, then exposed to night dew to bleach. The half calabash is an extremely useful bit of kitchen equipment; it is particularly favored for dipping liquids, since it is much more durable than is the gourd.

Sometimes water is carried to the fields in a calabash. A cut is made near the stem, and with a small stick the seeds and flesh are extracted, after which the shell is boiled. A corncob serves as a cork, and the receptacle (known as ¢úyuyu) is carried in a maguey fiber shoulder bag. The elongated fruit receives similar treatment when destined as a water container. More often, it is simply cut lengthwise and each half used as a dipper.

The prepared half shell of the globular calabash sometimes is taken to Papantla to be ornamented, as is the wooden tray (p. 211). Both surfaces are covered with commercial red paint, and on the convex side, is added a floral or bird design in polychrome (pl. 21, *c*). Like the tray, the painted calabash is one of the gifts usually stipulated by the bride's family. It is far less useful than is the tray, and generally is stored among minor household treasures, to be extracted upon special occasions and used as a drinking cup.

In addition to local products, lacquered calabashes quite often are brought to Papantla, for sale to townspeople and to the Totonac. Concerning their provenience, there is considerable confusion. Some evidently are outright Olinalá (Guerrero) lacquered and painted products; others (pl. 21, *d*) are similar, yet not entirely typical in decoration. It is believed locally that these lacquered calabashes are "from the State of Puebla." Perhaps this is because they pass through the hands of various middlemen before they reach Papantla; or perhaps because the vendors simply are not interested in divulging the provenience of their wares. We know of no center in Puebla where Olinalá-type lacquer is manufactured, although Daniel Rubín de la Borbolla tells us that he has heard such copies are being produced in Cholula and a nearby settlement.

## CERAMICS

Virtually every woman in Tajín is her own potter, and every household is strewn with a large assortment of home-made vessels and fragments (in map 9, note the number of pots standing in the house clearing).

The range in shape is not very great, but a fairly large number of vessels is in use, many of which have specified functions (see below). As a guess, each household probably has about 20 different pottery vessels in daily use, as well as a number of special forms, such as incense burners and candlesticks, which see service less frequently.

Without exception, Tajín pottery is heavy and crude. It is poorly fashioned, poorly finished, and poorly fired. The color of a single specimen may range from ocher and rosy tan to brown, gray, and black; firing clouds are prominent, since the ware is baked in an open blaze. All vessels are unglazed. Decoration is scanty and is confined chiefly to incense burners and candlesticks; painted ornament is extremely rare. Warping and cracking are the rule, and quite often a new vessel must be mended before it can be put to use. Cracks are

smeared with a paste made by mixing lime with the liquid drained from the *nixtamal* and with the scum from boiling cane sirup. High breakage often is attributed to the fact that a pregnant woman visited the house while the clay vessels were drying. If small girls touch an unidentified plant known as *cascabel*, "when they are grown, they will break every pottery vessel that comes to their hands."

It seems likely that in former times local pottery was of better quality than it is today. A water jar, made by the mother, now deceased, of Pablo González, is noticeably superior to any ware manufactured at present. Moreover, it is said that some decades ago, water jars were produced locally in quantity and were carried to nearby Coatzintla for sale. Unless the quality were infinitely better than it is today, it seems almost certain that there would have been no outside market.

By no means does the Tajín housewife depend exclusively on her own ceramic products. Nowadays, water jars are so heavy that they are used only for storage, and no woman attempts to haul water in a vessel of her own manufacture, if she can possibly avoid it. For carrying water, virtually all families rely on lightweight glazed jars (fig. 39), most of which seem to be manufactured

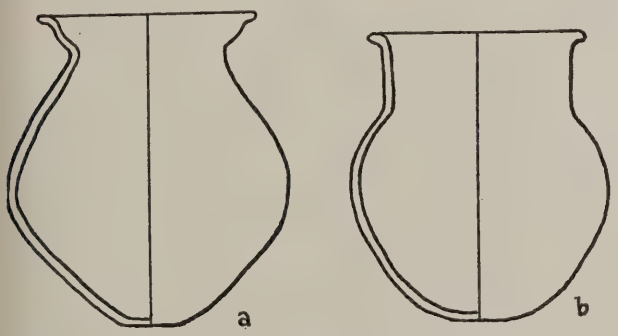


FIGURE 39.—Glazed water jars. *a*, From area of Zacatlán, Puebla; *b*, thought to be from Jalacingo, Veracruz (*sic*). Scale: ⅛ natural size.

commercially in the Zacatlán area of the Sierra de Puebla. Generally, these are bought from itinerant traders from the highlands; sometimes they are obtainable in Papantla. Moreover, an unglazed jar, with cream slip and a band of geometric design in maroon, occasionally is used in Tajín, as a water container. Apparently from Huejutla, Hidalgo, this type of jar has a very wide distribution and appears to be marketed from Tamazunchale to Tuxpan, and, on rare occasions, in Papantla.

Most families try to possess one or more shallow bowls, with interior glaze, for frying. Such vessels are available in Papantla, but the ware sold there, allegedly from Hidalgo, is said not to be durable. Glazed bowls from Zacatlán are greatly preferred, and vendors from the Sierra de Puebla find a ready market in Tajín. The first time such a bowl is used, either "maize gruel or new beans should be cooked in it; if fat is used at once, later the vessel will absorb grease, and the food will stick."

Although local wares cannot compare in quality with the imported products, there seems to be a real ceramic tradition in Tajín. Despite the poor quality of the output, women take great pains and considerable pride in their work. And every woman seems to set considerable store on her household pottery—perhaps because it is something which belongs definitely to her. In one case, a man abandoned his legal wife, to live with a younger woman, and the outraged spouse came to the house when nobody was home and broke all the dishes and cooking ware. This particular indignity was mentioned frequently by both the younger woman and by the neighbors.

A girl learns to make pottery by watching her mother, aunts, or grandmother. María Loreto, who lived in Talaxca as a child, started by making small bowls from balls of clay. Her mother encouraged her to use her imagination, telling her to fashion the vessels "as they came to her head." One adolescent boy enjoys playing with clay and occasionally makes a bowl or little figures (fig. 40).

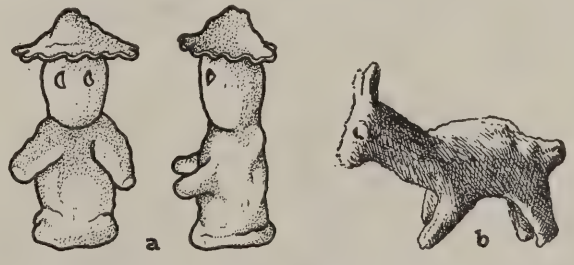


FIGURE 40.—Clay toys. Made by 14-year-old Pedro García. The hat of *a* is removable; originally, both specimens had black beans stuck in the clay to form eyes; these were destroyed in the course of firing. Height of *a*, 11.5 cm.; *b*, same scale.

His friends and relatives smirk indulgently but are not concerned by his dabbling in an essentially feminine art.

Despite the fact that every woman knows how to make pottery, some have better luck than others and some have more free time, hence there is a certain amount of specialization. If one housewife is "too busy," she may ask a friend, who prides herself on her baking plates, to sell her one or two. Or another friend, thought to make good water jars, will be asked to make an extra one for sale. Prices are moderate; in fact, the cost of a large jar is hardly sufficient to pay for the wood used in firing.

Pottery making in Tajín is a seasonal activity. During the spring drought, the clay is hard and thus difficult to dig. Often a woman lays in an extra supply, which she stores in large jars until needed. Moreover, the spring may be hot and windy, so that the vessels dry too rapidly. "They should be barely dry, and no more, or they crack. And if the wind strikes them, they warp." Accordingly, it is preferable to concentrate ceramic activities between All Souls' Day and mid-March. As the latter date approaches, there is a great flurry of pottery making, so that the household may be fully stocked before the deadline.

### VESSEL FORMS

Local products include jars (*ollas;* λámank) of various shapes and sizes (fig. 41). Those with concave base, made to fit the head (fig. 41, *h*), receive a special name (sáuwat) ; they are scarcely manufactured today, and lighter weight commercial jars, chiefly from Zacatlán (fig. 39), have replaced them.

Every household is well supplied with homemade pottery jars. Ana Méndez believes it indispensable to have one devoted exclusively to each of the following: (*a*) storing drinking water; (*b*) making coffee; (*c*) making maize gruel; (*d*) preparing *nixtamal;* (*e*) making tamales; (f) cooking beans; (*g*) heating bath water. In addition (*h*), several jars contain the water used for laundry and bathing and (*i*) others are used for odd storage, such as sand or clay for pottery making.

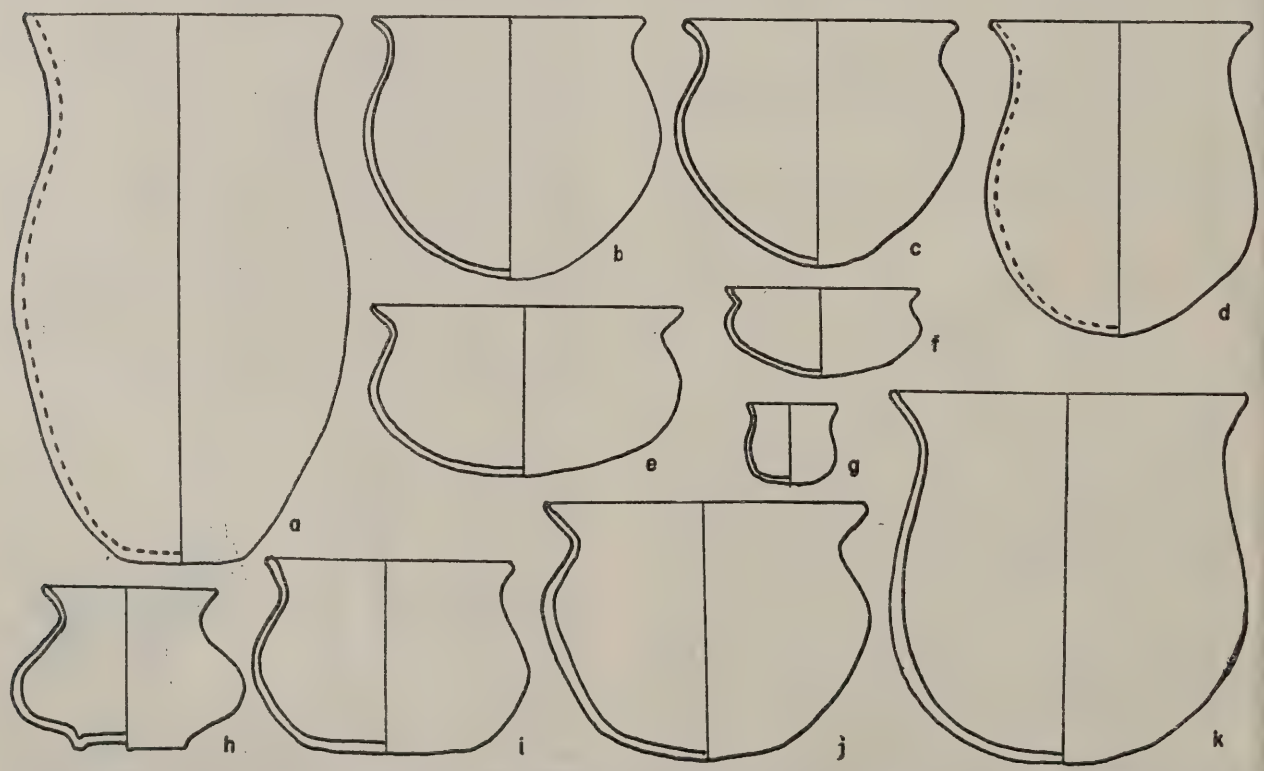


FIGURE 41.—Pottery jars. The manufacturer of *e* considers it a jar; a neighbor woman, a bowl. Redrawn from field sketches. *a, d,* In use; thickness could not be determined. Various women potters represented. Scale: ⅛ natural size.

Bowls (*cajetes;* laʔ, lʌkʔ) vary considerably in form and size (fig. 42). Some, seen from above, are round; some are oval; and a few are three-sided. The latter are made occasionally to receive the ground maize as it comes from the milling stone, although the oval form is more favored. Still other *cajetes*, used to protect plants from *arriera* ants, have the form of a hollow doughnut sliced in half. A special product, a pottery replica of the wooden tray used in laundering, probably should be classed with bowls. Of these, we have seen only three examples, presumably of local manufacture. The present owners received them from former occupants of the house site. Large and clumsy, they would not have been easy to transport.

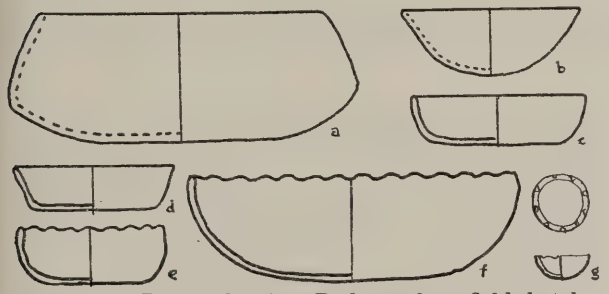

FIGURE 42.—Pottery bowls. Redrawn from field sketches. *a, b,* In use; thickness could not be determined. Various women potters represented. Scale: Slightly less than ⅛ natural size.

The differences in shape between jars and bowls is not always clear. They do not rest on proportion, inasmuch as some jars (fig. 41, *c, i, j*) have greater diameter than height. For the most part, jars have rounded bellies, rounded or pointed bases, and flaring rims, while bowls have rounded or flat bottoms, with the rims direct or incurved (fig. 42). In the minds of informants, the distinction does not depend on rim form, since one squat vessel (fig. 41, *e*) is regarded by one woman as a jar; by another, as a deep bowl. Perhaps, in the last analysis, function is more important than shape, and a vessel used for storing water or for boiling probably passes as a jar. Neither jars nor bowls can be considered decorated, although occasionally bowl rims are notched or scalloped (fig. 42, *e–g*).

In most households, a bowl is earmarked for each of the following uses: (*a*) washing hands before a meal; (*b*) washing *nixtamal;* (*c*) receiving the ground maize from the mill; (*d*) storing tomatoes; (*e*) storing chili; (*f*) storing other foods; (*g*) dipping lye-water from the storage jar; (*h*) dipping untreated water. In addition (*i*), in many families, children eat from home-made pottery bowls; and (*j*) a sizable one may serve as a dishpan (fig. 42, *a*).

The baking plate (*comal;* pálkʔ, pałka) is a large circular, ideally flat clay tray on which tortillas are cooked. "It should be more or less thick, so that the tortillas will not burn. But if it is very thick, it takes a long time to heat." Accordingly, María Loreto makes both thick and thin baking plates and uses the latter when she is pressed for time.

A pot cover (*tapadera;* limakačawan, λitakáču) is flat, like the baking plate, but has an effigy handle in the center (fig. 43). Relatively few families use such covers and they may be a recent innovation.

FIGURE 43.—Clay pot covers. Models made for us; *a,* by Ana Méndez; *b,* by Carmen Pérez Reyes. Scale: ⅛ natural size.

Every household has a certain amount of ceramic ceremonial equipment, in the form of candlesticks (*candeleros;* putaikatíla (figs. 44, 46, *a*)

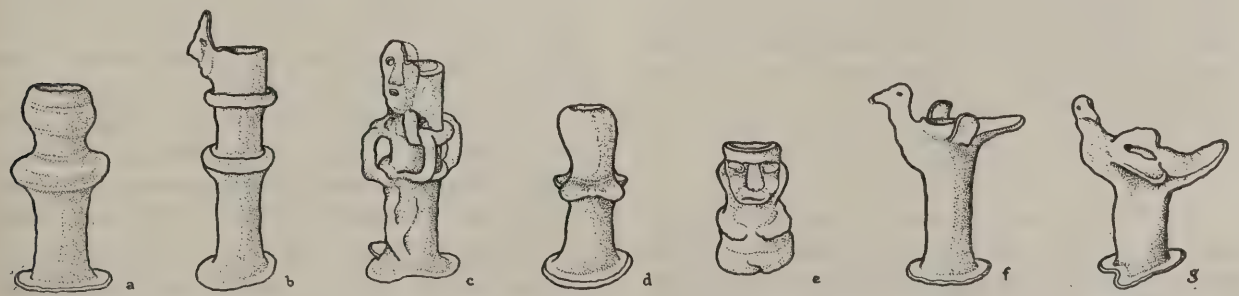

FIGURE 44.—Candlesticks. Pottery models made for us by Ana Méndez. Scale: Approximately ⅛ natural size.

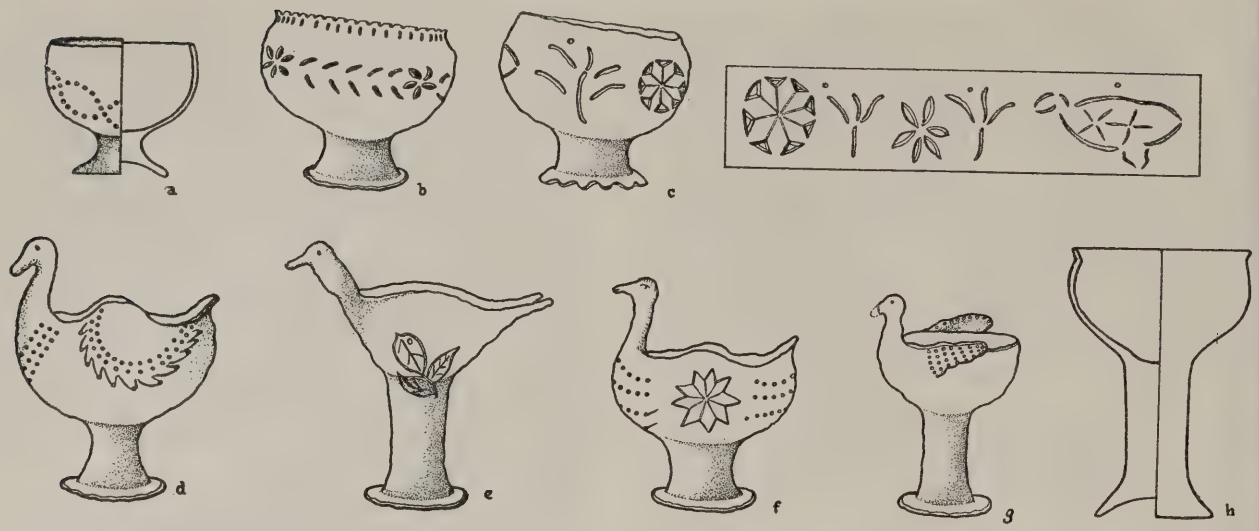

FIGURE 45.—Incense burners. *a–f*, Pottery models made for us; *g*, found on trail; *h*, sketched in home of Elena A. de Xochigua. *a*, *d*, *f*, Made by María Loreto, with ornament applied by Modesto González; *b*, *c*, by Rosa García; *e*, by Ana Méndez. Scale: ⅛ natural size.

and incense burners (*incensarios*, *copaleros;* pulukaskúyun) (fig. 45). Both often are effigies, usually birds. Modesto González suspects that the simple goblet form of incense burner (fig. 45, *h*) is more ancient than are the effigy types, but the latter have been used "for years." Sometimes a special container (fig. 46, *b*) is made to hold fresh

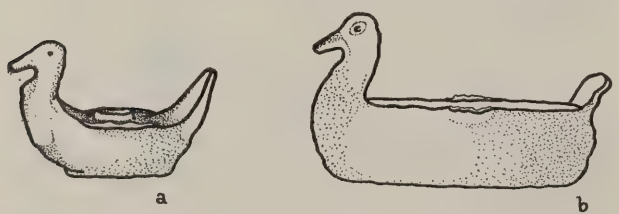

FIGURE 46.—Candlestick and container for unburned incense. *a*, Pottery model made by Ana Méndez; *b*, by Rosa García. Scale: ⅛ natural size.

incense, from which the supply in the burner is replenished.

Other pottery manufacturers include figures made by children (fig. 40), spindle whorls (*malacates;* lisi-wit) (fig. 54); and clay pipes (*cachimbas;* púškuli?), the latter known to us only through models (fig. 18, *b*, *c*).

### MATERIALS

Clay is abundant and seems to be dug from almost any spot in the vicinity of the *fundo legal* and, presumably, of outlying districts. Near the *fundo*, it usually is taken from shallow pits along the trail to the pyramids; along one of the main trails to Papantla, near the spot where the Holy Cross guards the road; or in any number of individual fields. There are said to be several different colors—white, yellow, red, gray, and black Some women regard all as equally usable.

A woman collects the clay in her circular wooden tray. Should, by any chance, someone pass at the moment she is excavating, the success of the enterprise is jeopardized. To avoid this disaster, the woman throws a bit of clay at the intruder, when the latter does not notice. When the tray is filled, a couple of twigs are arranged on top, in the form of a cross, as protection on the homeward route. The tray is lifted to the head and borne home; upon reaching the house, the twigs are thrown away.

Some clay is said not to require the addition of temper; it can be used for jars, but if a baking plate is made of it, the tortillas will stick to the surface. To most clay, sand is added. Soft sandstone is collected from the vicinity of the pyramids and is ground on the metate, or sand from the arroyo is used; "sometimes the arroyo has no sand, if the current has brought none." Some women collect sand from the stream bed when it is plentiful and store it for future use. According to one informant, the sand and clay should come from the same vicinity, or "the earth will become angry" and the vessels will break when fired.

Sand collected from the arroyo is washed on the spot. It is placed in the wooden tray; water is added and allowed to run off, carrying with it extraneous matter. The sand then is spread in the sun to dry and later is passed through a sieve made of a perforated half of a calabash shell. In this state, the temper is ready for immediate use.

The clay receives little preliminary preparation; it is not spread to dry. When it is brought to the house, a bit of water may be added and the container covered with castor leaves. The moist clay is worked between the hands; a bit of the prepared sand is dropped on the surface of an inverted wooden tray and the clay kneaded with it. During the process, small stones are removed. When the clay is smooth, more sand may be sprinkled over it and worked in. The amount of temper is not measured; the potter judges from the feel of the mixture.

### MANUFACTURE

*Jars.*—The detailed description below, of the manufacture of a jar by Ana Méndez, may be considered representative. The number and size of the initial coils vary with the size of the pot, and some women smooth with a rag instead of the hand; but, by and large, the technique seems pretty much the same among our several friends.

Doña Anita has the clay already prepared and covered with leaves, to keep it moist. She inverts an old box and uses its upper surface as a table, on which she spreads a banana leaf, split down the middle, so that it will lie flat.

She then removes a sizable lump of clay from her main stock and turns it counterclockwise in both hands, squeezing at the same time, so that the clay forms a long sausage, held vertically, which is 7 or 8 cm. in diameter (pl. 24, *a*).

Now, she arranges the roll of clay on the banana leaf in the form of a half circle. She prepares another roll in precisely the same manner, and with it completes the circle, pinching the joints together. She repeats the process, and this time places the new roll of clay directly on top of the already formed coil (pl. 24, *b*). She adds another roll, to complete the second circle, and again pinches the junctures together. Next is added a third circle of clay, consisting of one very long and one very short roll. At this point, there are three circles of clay resting on top of one another (pl. 24, *c*), each formed by two discrete rolls of clay pinched together at the respective junctions. The first circle has its joints along the axis of the banana leaf; the second is joined at precisely opposite points (that is, 90 degrees removed) (pl. 24, *b*); the third circle likewise has the joints broken.

Doña Anita now places her left hand against the exterior of the three superimposed circles, as a support; and with the right hand, she applies upward strokes to the interior, fusing the coils. Then, with her left hand supporting the interior, she strokes the exterior upward.

By this time, the cylinder of clay stands about 35 cm. tall (pl. 24, *d*). An old corncob (with clay from previous operations embedded in its hollows) is dipped in water, and with it the upper part of the exterior of the cylinder is scraped, using an upward, vertical movement (pl. 24, *e*).

Next, Doña Anita selects one of two fragments of the calabash shell, which have been cut with a knife to form rough, concavo-convex disks. With one of these, she scrapes the interior of the upper part of the cylinder, using the same vertical motion. During this process, the left hand is held against the exterior, to support the wall (pl. 24, *f*).

Then the interior wall is smoothed with her right hand, by means of horizontal stroking motions, while the left hand is held against the exterior. The latter has dried somewhat, for the sun has come out; Doña Anita dips her hand in water and rubs the exterior wall horizontally.

Stroking with the corncob has produced a considerable flare at the upper edge of the cylinder, and this is to become the rim of the jar. The belly now is expanded, by rubbing the wall horizontally on the interior and pushing outward, with the right hand, while the left, on the exterior, protects the wall from undue pressure (pl. 24, *g*). Doña Anita steps back to view the result, then attempts to expand part of the body still further, so that the vessel may be approximately symmetrical.

At last, she is satisfied, and the partially shaped vessel, innocent of base, is allowed to stand 4 or 5 days. The lower part of the belly is carefully covered with castor leaves, to keep the clay moist, while the rim and upper part are exposed to dry. By the end of a few days, the vessel is inverted, to stand mouth downward on the box. The unfinished base now points upward. Because of its covering of leaves, the clay still is humid. Also, it is very thick at this point where, previously, it rested on the box. With gentle, upward strokes, the clay is thinned and pressed upward, to close the aperture; (plate 19, *h*, shows this operation nearly completed on the vessel in the right foreground). Sometimes more clay is added, in the form of a roll, or as a small cake.

If the jar is small, handling is less hazardous and the base may be completed immediately the walls and rim are finished. A completed jar is allowed to dry, after which the interior base is smoothed somewhat, and the exterior of the vessel is polished with a pebble. Despite these attentions, the surface of a jar generally is rough and gives little evidence of polishing. Often the vertical striations which have resulted from stroking with the corncob are to be seen on the finished specimen, just below the rim.

The next step is firing. Any kind of wood may be used, provided it is thoroughly dry and the

sticks are sufficiently long and thick. Even the *chaca* (No. 228), ordinarily disdained as fuel, is acceptable. It is said that formerly, bamboo (*tarro*, No. 180) was greatly favored and that vessels baked in its fire "ring like a bell."

One evening, we watched Doña Anita bake an unusually large jar which she had made almost a month before:

The wood is neatly stacked. On the ground are four or five large trunks, of uniform length, all laid parallel and touching one another. On top of them, of the same length and likewise parallel, somewhat lighter wood is stacked. At each side, three light stakes have been driven into the ground, to keep the wood from rolling out of place. The pyre stands about 0.5 m. high and a bit over a meter in length.

Doña Anita lights the fire on the top, using coals from her kitchen hearth, and fanning the incipient blaze with an old hat of her husband's (the firefan is unknown in Tajín). When the pyre is well lighted, she and her spouse bring the large jar from the house and place it directly on the fire, mouth downward. She continues fanning the blaze, until at last the rim of the jar turns reddish.

After a considerable lapse of time, although the red color does not extend beyond the rim, the vessel is turned. Her husband, standing at one side, inserts a long pole beneath the rim of the pot, while Doña Anita, on the opposite side, pushes with a pole against the lower wall. The jar is turned on its side, and her husband, with his pole, forces it again into vertical position, this time, rim upward. With the poles, the firewood is pushed around in such manner that thick sticks are about the base of the pot and prevent its falling.

The vessel remains in this position until the fire is consumed. It turns only slightly red on the bottom and lower walls, and the color does not extend to the upper half of the vessel. In the morning of the following day, the pot is removed from the ashes.

If the jar is very small, it may be baked on a simple bonfire, or on the kitchen hearth, with the sticks placed radially. In this case, likewise, the vessel first is placed mouth down, and later is turned upright. Sometimes, it is said two jars may be fired concurrently, but multiple baking seems unusual.

*Bowls.*—The initial steps in making a large bowl—circular or oval—are identical with those of a jar:

Rolls of clay are shaped between the hands and two are placed to form a circle or an oval on a banana leaf, which covers a board or the top of a box. Ordinarily, two superimposed circles of clay rolls give sufficient height for the walls (pl. 25, *a*). With upward stroking of the fingers, the circles are fused, first on the interior wall (pl. 25, *b*), then on the exterior. The upper edge is wiped with the moistened hand to form the rim of the bowl (pl. 25, *c*), following which the walls are scraped with the calabash disk described previously.

In contrast to a jar, the base of a bowl is added at once, and the vessel is not inverted for this operation:

Clay is patted between the hands, as though it were a tortilla, until it forms a disk of the indicated size and thickness. This is placed directly on the banana leaf, inside the cylindrical walls. With the fingertips, the disk and side walls are worked together. The hands are dipped in water and the whole surface wiped smooth (pl. 25, *d*).

The finished vessel is set to one side, on rags, and surrounded by castor leaves, so that it may dry slowly. A semidry vessel is scraped further and the base-wall junction smoothed.

We did not have opportunity to witness the manufacture of the special *cajete*, which takes the form of a hollow doughnut, transversely bisected. These clay rings, open at the top to receive water, are set around young plants to guard them against ants. They also may be used about the feet of the posts which support the box in which the Old World bee is kept—again, as protection against ants. Several women in Tajín manufacture such ring-shaped vessels, but we cannot say whether the form is of recent introduction. Identical pottery devices as protection against ants are found in mestizo communities in Jalisco, and, on the authority of Erich Georgi, in Acatlán in the Mixteca.

Bowls are fired as are jars, according to size. If the vessel is large, it requires a special pyre, with all the wood parallel and of uniform length. If it is small, it may be baked on the kitchen hearth, with the wood arranged radially. As usual, the vessel is placed in the fire, mouth down, and later is turned upright.

*Baking plate and pot cover.*—A baking plate (*comal*) for tortillas generally is formed on the base of the circular wooden tray, inverted for this purpose (pl. 25, *e*), and sprinkled with sand or finely powdered ash, so that the clay will not stick.

A ball of mud is worked between the hands and then is placed on the tray. With the palm, it is beaten lightly and pressed until it covers the entire circular surface of the tray. The rim is turned up slightly, by running one finger about the circumference onl the inside, another on the outside. Occasionally, the rim is pinched as though it were piecrust.

The upper surface of the plate is smoothed alternately with the palm (pl. 25, *f*) and with a corncob, which has been toasted to remove loose fibers. With the cob, finger

impressions are obliterated, and any small stones which remain in the clay are brought to the surface and removed. "If one leaves stones, they heat and break the plate."

For several days, the griddle is allowed to dry; the center is exposed, but the rim is covered, to prevent its splitting. When, finally, a fingernail leaves no impression, the entire upper surface of the plate is polished with a small stone, so that the tortillas will not stick; the lower surface remains rough.

The plate must be thoroughly dry before it is baked; in fall, about 15 days are required; in spring, half that time. The *comal* is either fired on the kitchen hearth or on a small blaze outside, in both cases, with the wood arranged radially (pl. 25, *g*). To prevent breakage, burning brands or a handful of ash are placed on the upper surface of the plate during firing; the latter usually requires a couple of hours.

Probably because of its shape, the *comal* is difficult to fire successfully, and specimens which survive the ordeal intact generally are badly warped. One griddle broke "because it was photographed"; another, simply because one of us witnessed the firing. Women do not make a *comal* and a jar concurrently; "one of the vessels might become angry and break the other." Even an old, used griddle requires special consideration. If it is on the kitchen fire, but not actually in use—that is, when tortilla making has been completed, or when there is a break in that activity—it is advisable to place a burning brand on the plate, "so that it may not suffer."

The manufacture of a pot cover is identical with that of the *comal*, except that a small effigy, to serve as a knob (fig. 43), is formed separately, in the hands, and is affixed to the center of the plate when the clay still is moist.

*Candlesticks and incense burners.*—Candlesticks are formed from a roll of clay, 6 to 8 cm. in diameter and about 15 cm. long. At one end, the finger is pressed into the wet clay to form the cavity for the candle. The stem is modeled to the taste of the potter, and ornament sometimes is appliqued (fig. 44, *c*, *e*). The base of the candlestick is completed last, at least, by Ana Méndez. One may sit to make a candlestick, but the potter stands as she works on other ceramic products, no matter how small.

Hanging incense burners (not illustrated) usually have a low ring base. They are fashioned as are bowls, and four holes are punched near the rim, through which wires for suspension are passed. Otherwise, these specimens are similar to the table models shown in figure 45, *a–c*.

Standing incense burners generally have a tall base (fig. 45); some are goblet-shaped (fig. 45, *h*). They are manufactured by the lump method. A ball of clay is held in the hands and is constricted in the center, to form the stem, at each end of which is an amorphous mass of clay. One is worked into some semblance of a base and the half-finished vessel stood on it. Next, the bowl part is formed, by stroking the upper mass of clay upward, with the right hand on the exterior, as a support. When the receptacle is formed, an effigy head may be modeled separately, in the hands, and affixed to the bowl. The surface is smoothed and the entire vessel wrapped in rags or leaves, so that it may dry evenly. Because of their relatively small size, both candlesticks and incense burners usually are baked on the kitchen hearth.

*Other ceramic products.*—We did not see the flat-bottomed container for unburned incense (fig. 46, *b*) in the process of manufacture but suppose it to be made as is a bowl, with the addition of effigy features.

Nor did we have opportunity to see spindle whorls (fig. 54) or pipes made. A pipe probably is formed pretty much as is a candlestick. Modesto González presented us with several models (fig. 18, *b*, *c*,), and we suspect that at least the effigy products (fig. 18, *b*) represent his own ideas rather than an ancient Totonac pattern. In former times, women made the pipes; presumably then, as now, they were indisputably the potters.

*Comments.*—The Totonac manner of making a jar, by forming the sides and rim first, as a cylinder, and completing the base later (p. 217), warrants special comment, for such procedure seldom has been reported for the New World. Of published instances, we know but one, from San Salvador (Lothrop, pp. 112–115). However, G. Stresser-Péan has witnessed similar ceramic procedure in parts of the Huasteca, as has Ricardo Pozas in Tecomatepec, near Ixtapan de la Sal, in the State of Mexico. In short, this method of manufacturing pots, which Lothrop (p. 116) regarded as unique, may prove to be relatively wide-

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spread. The occurrences mentioned above are curiously scattered, and it is highly desirable that the complete distribution be known.

### DECORATION

Most Tajín ceramic ornament is concentrated on candlesticks and incense burners. Both involve a certain amount of modeling. Candlesticks, in particular, have appliquéd decoration (fig. 44, *c*, *e*); incense burners frequently are adorned with punching, engraving, and cut-out work (fig. 45, *a–g*). Modeling and appliqué take place at the time the product is formed. Punching, engraving, and cut-out work, made with a nail or small stick, are performed when the specimen is partially dry. The incense burners made for us by María Loreto (fig. 45, *d*, *f*) actually were decorated by Modesto González.

Painting is relatively infrequent. It is said that sometimes candlesticks and incense burners are painted with a *tepetate* (*sic*) from the arroyo, which turns red when fired. We saw no specimens so decorated and the practice evidently is not common.

Occasionally, both candlesticks and incense burners have rude ornament in asphalt (*chapopote;* čápopot [*sic*]), which is bought in Papantla or Tecolutla. When the specimens are still hot from firing, a bit of asphalt is rubbed over them. We have seen only dribbles and simple stripes (małtítwa), but some claim that lozenges (*pemoles;* no Totonac name) and frets (?) (*grecas;* taskúlit) also are used. The practice of decorating with asphalt is said to be ancient. It may be even more ancient than informants realize, for some of the figurines excavated recently by Ing. José García Payón, in sixteenth-century "Cempoala," appear to have received similar treatment.

One further detail should be mentioned here—that is, the former use, in Talaxca, of a blue vegetable dye, said to have been applied to the exterior walls of pottery jars (p. 244).

## CORDAGE, KNOTS, BRAIDS

### CORDAGE

Today the Totonac rely largely upon commercial twine and rope, and their own manufactures are limited.

Cordage of the leaf of the *palma redonda* (No. 259) often is used to tie the corn-husk wrapping about cakes of sugar. The palm is cut green and, to make it less brittle, is boiled an hour or so in cane sirup, following which it is washed and dried. Later, it is split in strips and twisted. The latter process is performed by Magdaleno García as follows:

> The tips of two strands are passed between the big toe and the succeeding one, of the left foot, and are given a double twist, to secure them. The long end is held in the hands. At the start, the strands are twisted between the fingers, but after a few turns, they are rolled between the palms—the left hand moving away from the body, the right, toward it. As the twisting starts, the strands are passed beneath the big toe of the right foot (fig. 47) to give tension. Once the strands are loosely united, twisting ceases. The whole procedure takes place with great dispatch.

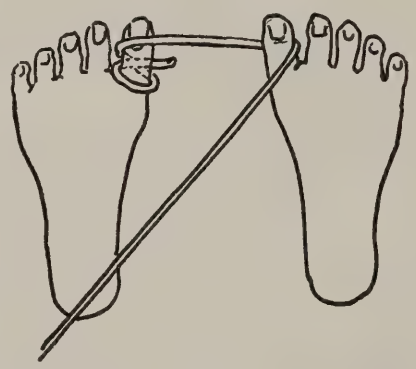

FIGURE 47.—Making cordage of *palma real*. See text (p. 220) for details.

Bark of both the *jonote blanco* and the *jonote colorado* (Nos. 25, 100) serves as cordage. The former is preferred, because it is softer. It is cut from the tree and for a week is allowed to lie in the arroyo, to free the fiber. The latter is removed and dried, then is left outside the house all night, to bleach. We saw a seven-strand braid tumpline model made of *jonote blanco*. When the braided section was sufficiently long, the loose strands at either end were twisted into cordage. First, the seven strands were divided into two lots, of three and four strands, respectively. The two lots were rolled separately, between the palm and the shin; then both were rolled together (away from the body), to form a two-strand twine.

*Jonote colorado* requires no retting. The bark is cut from the tree in long, narrow strips, and with the fingers, the inner bark is removed. It is dried in the sun a couple of days, then is ready for use.

Formerly, the fiber of a bromelia (*pita*, No.

224) was used as sewing thread, as well as to make cordage for fish nets. The flesh was removed with a split bamboo, or the leaf was allowed to stand in the arroyo for about 2 weeks. This fiber is scarcely used today, although it is said that not long ago one man had a supply reposing in the arroyo, when the stream flooded and carried the entire lot with it. In the early seventeenth century, *pita* fiber is mentioned as one of the principal products of Papantla (Mota y Escobar, p. 233); and in the late sixteenth century, *pita* is said to have been a specialty of the Zacatlán area, being marketed in Tlaxcala (Relación de Zacatlán). Another sixteenth-century source (Paso y Troncoso, 5: 110) reports that the Totonac of Coacoatzintla, near Jalapa, manufactured clothing of *pita* fiber.

### KNOTS

We have not attempted to record all the knots and lashings current in Tajín, but a few are noted in figure 48; none appears to be named. That shown in *a* generally is used to splice ropes and lianas. *b* is used in roofing; one end of a liana is tied to a withe of the roof frame; the knot is pulled tight, following which the free end is used to lash the thatch. Various ways of tying thatch are shown elsewhere (fig. 20). The manner of lashing the mother beam to a house post is seen (interior view) in figure 48, *c*.

Several knots are used in the course of the famous Flying Pole or Volador dance; the latter will be treated in detail in Part 2, which will be published separately. Briefly, a tall pole (ca. 30 m. high) is set in the ground. On its tip is fitted a spoollike attachment which revolves and from which is suspended a quadrilateral frame. On each bar of the latter one of the four fliers sits prior to the descent. At a given signal, each ties a rope about his waist and throws himself backward, off the frame. As the frame and the spool revolve, the dancers descend to the ground, describing circles of progressively smaller diameter until they land.

The ropes which support the quadrilateral frame are looped over one another precisely as shown in figure 48, *a*. This "knot" rests in a shallow depression on the upper surface of the spool, each of the four extremities being passed through a perforation in the latter and tied to one of the corners of the frame.

On the main pole, immediately beneath the spool, are wrapped the four ropes by means of which the dancers are lowered to the ground. The end of each rope is tied to the post, as shown in *d*, following which the free end is wrapped about the pole in such manner that the coils unwind, as the frame and spool revolve. What remains of the rope, after the wrapping, is tossed

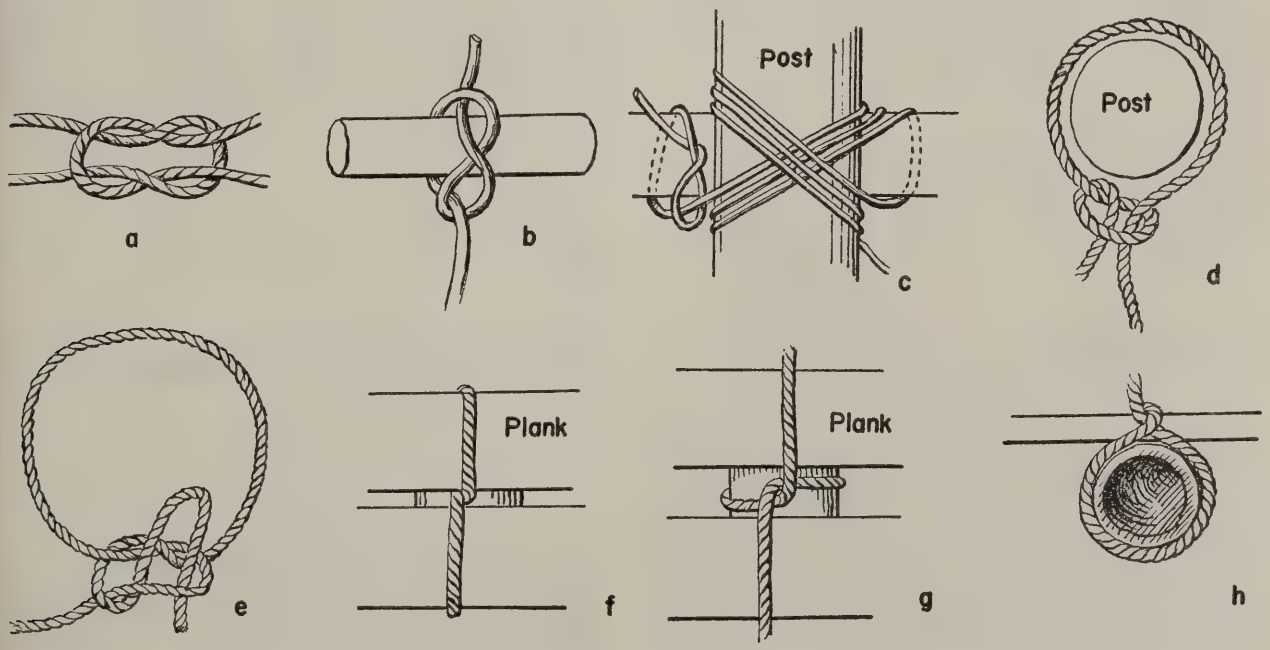


FIGURE 48.—Knots and lashings. See text (pp. 221-222) for explanation.

over a bar of the frame, so that each of the four dancers has a loose end of rope at hand. This is tied about the waist, using the knot shown in figure 48, *e*. This particular knot has the advantage of tightening, nooselike, not against the body, but against the upstanding loop. An identical knot is used in tethering a horse by the neck; another is said to serve equally well, but we neglected to record it.

Still another group of dancers makes use of a knot. These are the Negritos, whose performance is, in large part, a rapid tap dance executed on a sounding board. The planks of the latter are lashed to transverse bamboos, which raise them a few inches above the ground. Figure 48, *f*, shows the planks from above, each traversed by a rope; in *g*, the planks have been separated slightly, to show how the rope encloses the bamboo beneath; *h* gives the section of this lashing.

The knots and lashings noted above are used by men, in the course of house building, dancing, or tethering animals; men also affix a leather strap to the sheath of the machete in various ways (fig. 69). Women utilize a different series of knots in making the fringe that adorns their textile products (fig. 62).

### BRAIDS

Women braid their hair in three strands. Otherwise, braiding appears to be confined to the manufacture of the head tump, made from the bark of one of the *jonotes* (see above). According to the desired width, the braid may be of 7 (fig. 49, *a*), 9 or 11 strands (fig. 49, *b*). The braid is held in both hands and is worked away from the operator (pl. 26, *a*). When it is sufficiently long to be looped over the crown of the head and to reach the chest, it is tied. In a small model made for us, the loose strands of the braid, at each end, were twisted to form cordage, as described above. Generally, however, the end of the braid is turned back on itself and secured in place, while a rope or other strong cord is affixed to the end (fig. 50).

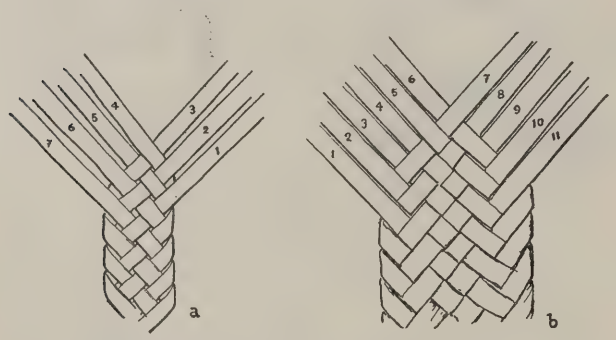


FIGURE 49.—Braids. Models made by Modesto González. *a*, Seven-strand. At the point illustrated, strand 7 would pass next under 6 and 5, and over 4. Following this move, strand 1 would pass beneath 2 and 3, and over 7, the latter now being in central position. *b*, 11-strand braid. The next strand to shift position is 1, which passes beneath 2 and 3, over 4 and 5, and under 6. Next, strand 11 is passed beneath 10 and 9, over 8 and 7, and under 1, the latter now being in central position.

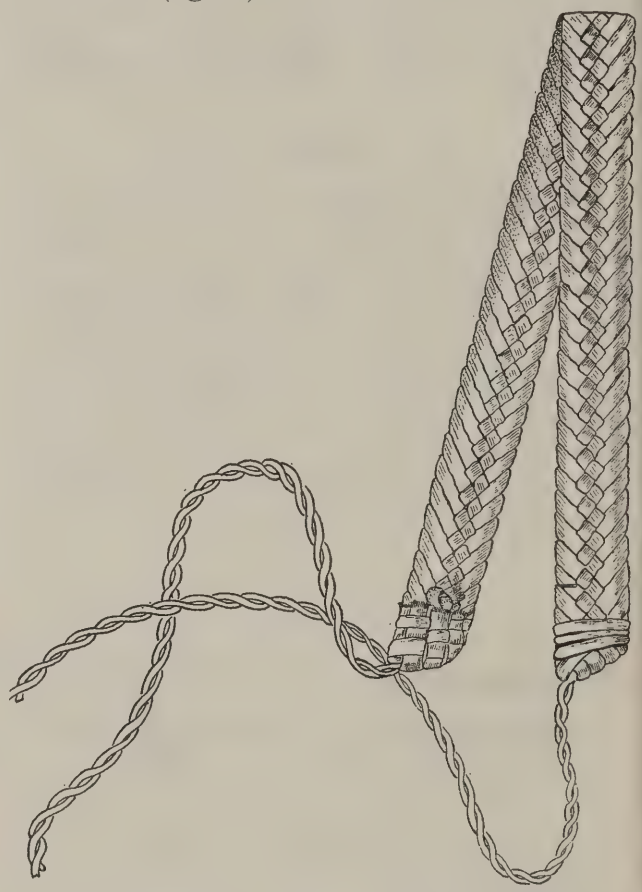

FIGURE 50.—Model tumpline. Of seven-strand braid; made by Modesto González, of the bark of *jonote colorado*. Width ca. 3 cm.

## PALM WEAVING

### ALTAR ORNAMENTS

An assortment of palm figures (pl. 27) is woven by the men for certain ceremonial occasions, especially those which center about the domestic shrine. Flat, rosettelike ornaments are attached

with a skewer to greenery decorating either the altar frame (pl. 15, *a*) or the arch set at the head of a grave in the cemetery. Sometimes, palm arches are erected in honor of a visiting saint, and to them palm rosettes are pinned (pl. 26, *f*). Flowers, according to season, but most often marigolds, bougainvillea, or *Plumeria* (No. 151) are stuck about the edge of the woven center (pl. 27, *b*).

The simplest form of rosette, known as a star, is used in quantity. Ten or fifteen men may collaborate in collecting the palm and in weaving the figures. Not all know how to make them; a good many are able to weave the simple star, but few make the more elaborate figures. The latter are hung from the canopy over the altar or from the arch over the grave.

Palm figures—sometimes quite elaborate ones—are woven in many parts of Mexico, especially for Palm Sunday. Those of Tajín are based, for the most part, on the rosettelike star, whose distribution, if known, might be of considerable interest. A passing mention of ornamental "stars and rosettes" of palm, for the Mixteca (Starr, p. 127) may indicate that similar manufactures are current there. The possibility of an essentially Gulf coast distribution might also be borne in mind.

In Tajín, the immature leaf from the heart of the *coyol* palm (No. 362) is preferred; if necessary, that of the *palma redonda* (No. 259) may be substituted. The leaflets are folded in the young *coyol* leaf, which is bent to loosen them. Each leaflet then is separated with care and is checked twice to make sure that all thornlike spines have been removed. Each narrow leaflet grows doubled lengthwise, and along the fold is a semirigid vein. This and adjacent parts of the leaflets are cream-colored, while the doubled edges are a light green; in weaving, these differences in color are capitalized.

*Star.*—For the basic palm figure known as a star (*estrella;* ¢ʌku, ¢u·kswat) (pl. 27, *a*, *b*), either 33 or 37 leaflets are used, dependent upon the size of the finished specimen. Below is a brief description of the manufacture of a star by Lorenzo Xochigua.

A start is made by placing three leaflets in triangular formation (fig. 51, *a*) on a table or board; the creamy vein of each faces the central opening. The base of the fourth leaflet is inserted in the central aperture and is pulled into place (fig. 51, *b*). The fifth is introduced from the outside, as is the sixth. Work continues counterclockwise, until the circle is completed and rather compactly woven. By this time, the central aperture no longer is triangular, but circular. In every case, the leaflet is so inserted that its cream-colored vein lies toward the central opening.

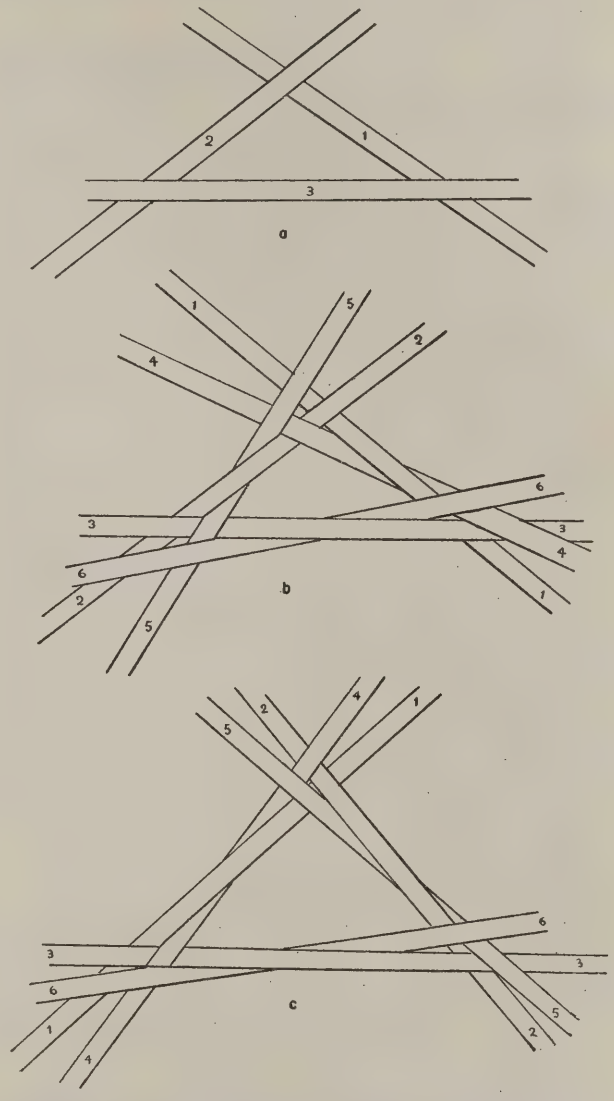


FIGURE 51.—Start of palm star figure. *a*, *b*, Foundation used by Lorenzo Xochigua; *c*, by Rutilio Olmos. See text (pp. 223–224) for explanation.

Next, the leaflets which lie on the upper or work face are lifted, and a narrow strip of palm leaf (pl. 27, *a*) or of *jonote* (No. 100) bark is passed beneath them. The strand is pulled tight and tied, so that the woven center will not ravel. Now, the half-finished star is held vertically in one hand and is twirled rapidly, while the thumb taps the woven center lightly; this results in a more even distribution of the individual leaflets.

Finally, the loose ends of the leaflets are trimmed. Each tip is doubled longitudinally and is cut diagonally with a knife. Thus, as the leaflet opens, it terminates in a V-shaped notch (pl. 27, *a–d*). First, the ends of the upper face are trimmed; next, those on the lower face. The result is a rosettelike figure, highly decorative, especially when bright flowers are inserted about the edge of the woven center (pl. 27, *b*).

Rutilio Olmos, originally of Cazuelas, near Papantla, but now a resident of Tajín, follows a slightly different procedure.

He likewise starts with a foundation of three leaflets, crossed to form a triangle, but he lays them in different order (fig. 51, *c*). Moreover, the fourth leaflet is not inserted directly in the central opening, but from the outside; it passes through the aperture and emerges at the lower left. The fifth is added from the outside, at the lower right; the sixth, at the lower left, also from the outside. In short, he works clockwise. Leaflets are added until the center is completely filled; the finishing process is identical with that described above.

Don Rutilio claims to have devised a special technique for producing a variant of the *estrella.* He is so pleased with his alleged invention that he requested we allow nobody to unravel the specimen he gave us (pl. 27, *c*), for fear they would discover his secret. "They may look, no more." The technique consists in taking a half completed star and of overweaving upon it. He worked so rapidly and was so interested in having the operation not recorded, that we are unable to give the precise procedure. The result is a heavier, more substantial star, with the central portion not simply radial, but overlapping.

*Other palm figures.*—Basically, other palm ornaments are variants of the star.

One, generally known as a sun (*sol*, čičini?), is called sacrament (*sacramento;* kinpučinakan) by Don Rutilio. Essentially, this is a double-faced star whose weaving is pulled very tight (pl. 27, *f*).

The first step is to make a complete star, as described above, except for the final trimming. Once completed, the ends of all the leaflets of the upper or work face are turned upward and rewoven. One from the lower left is carried to the upper right, following which Don Rutilio interleaves the leaflets all around the circle, proceeding counterclockwise. The result is a double-faced star of normal size. But carefully, one by one, the ends of the leaflets are pulled to tighten the weaving. The center shrinks proportionately, until the end result is a tightly woven disk about the size of a tennis ball (pl. 27, *f*).

The leaflets of the under face, which have not been included in the reweaving, now are trimmed to form a *re-splandor* (a series of jagged rays, such as often form the halo in paintings of the Holy Family), and long, slender palm veins from which the leaf has been stripped, are inserted in pairs, to emphasize the raylike effect. The figure is laid on the table and the ends of the remaining leaflets are trimmed, in counterclockwise progression, to coincide with those already cut.

A sun, used as an altar ornament, is seen at the top center of plate 26, *d;* another is partially visible at the upper left.

A further variant is known as a pineapple *piña;* ma·ɕat?, ma·ɕaɕa).

This, too, starts as a normal star, with untrimmed ends. All the leaflet ends on the upper or work surface are collected, lifted upward, and tied together in a bunch. They outline a sort of hollow, pear-shaped cavity. Next, the ends of the leaflets from the lower face are picked up and are woven diagonally, one by one, with the upper ones, the latter forming the warp. Work proceeds clockwise.

This operation completed, Don Rutilio unties the bark strand with which the warps have been tied together. He opens the top of the "pineapple," turns the weft ends inside, and pulls them downward, to emerge through the central aperture of the original star, where they hang like fringe (pl. 27, *e*). The warps then are cut to uniform length and are retied in a bunch, with a strand of bark, by which the figure may be hung.

Still another palm ornament, likewise based on a star, is known as a basket (*canasto;* aksmul) or gourd (*guaje;* akstuntu).

The basic star or *estrella* is woven, but not trimmed. The ends of all the leaflets of the upper face are turned upward and rewoven, forming what really is a double-faced star. However, the two faces are several centimeters apart and are connected by ribs, formed by the leaflets of the upper face of the original figure. The work has been so planned that the ends of all these are the tips of the leaflets, and they billow loosely over the outside of the "basket," like a fringe (pl. 27, *g*). The lower leaflets of the original star all are basal ends, which are trimmed short and are allowed to stick out horizontally for a short distance, about the bottom of the "basket." A strip of *jonote* bark is affixed to the top, so that the figure may be hung.

### PALM ARCHES

When the image of a saint is to visit Tajín, special arches of *palma real* (No. 364) are arranged in honor of the occasion. Along the trail, a pair of leaves may be set, the bases of the petioles in the ground, about a meter apart, and the tips brought together, to form an arch. Or, at points where those who carry the saint are to rest, a canopy of four leaves (pl. 26, *f*) is erected.

The leaf segments along the inner side of the simple arch are woven into a sort of selvage (pl.

27, *d*; fig. 52). We did not see this being made, but it is said that work starts above and proceeds downward; at the bottom is a fringe of loose segments which form a sort of tassel on the ground. We photographed one canopy of four leaves (pl. 26, *f*), which has this selvage on both sides of the lower half of each. To these arches and canopies palm stars usually are pinned, giving a very festive effect.

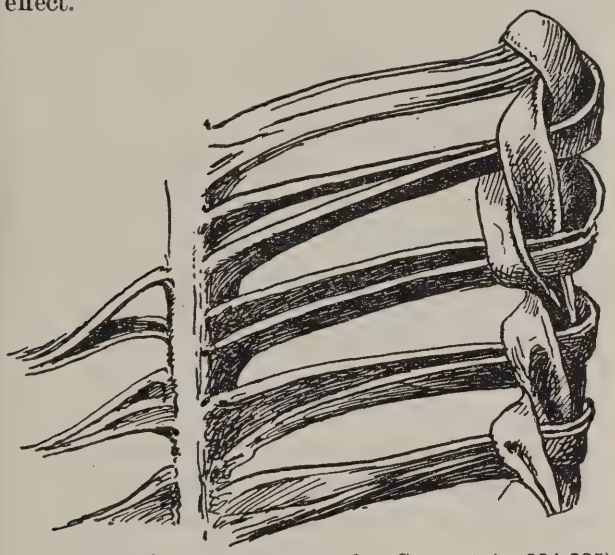

FIGURE 52.—Selvage of palm arch. See text (p. 224-225) for explanation.

### OTHER PALM MANUFACTURES

The ancient Totonac are said to have made palm mats and seats (*asientos*), decorated in colors (Sahagun 3: 129), but this craft is not found in Tajín today.

One day, for our entertainment, Pablo González wove a couple of toys of the leaf of the *coyol* palm, one representing a serpent, the other a grasshopper (fig. 53). As far as we know, the manufacture of such palm effigies is not common.

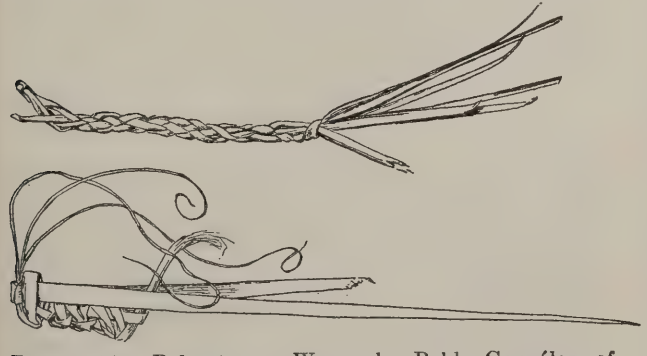

FIGURE 53.—Palm toys. Woven by Pablo González, of *coyol* palm. Upper, a serpent; lower, a grasshopper. Scale: Slightly less than ⅓ natural size.

In contrast to the Huasteca (Starr, p. 284), there is no weaving of palm hats in Tajín, although it is said that Ignacio de la Cruz, long since dead, knew how to braid strips of *palma redonda*, to be sewn into hats.

### BASKETRY

In "Cempoala," the Spaniards were offered baskets of hog plums (Díaz del Castillo 1: 171), but in Tajín today, baskets are of little importance. From time to time, a commercial product is bought in Papantla and serves as a general utility container—for maize, for other food, and, in one house, for storing balls of spun cotton. Strangely enough, no basket is used in harvesting, and corn is collected in commercial sacks; it is possible that the latter have replaced the old carrying frame. The need for baskets probably is slight, since gourds and wooden trays are plentiful in every household; moreover, the Papantla market supplies maguey fiber shoulder bags and flexible palm baskets.[22]

Of baskets as such, the only specimens we have seen are of wickerwork. Although baskets in the literal sense are rare, paradoxically, basketry stitches are plentiful. The upright poles which form fences and house walls are attached to crosspieces with liana, which is applied as wrapped twine; and the rectangular hanging shelves used in kitchens are held together with the same stitch. It seems likely that the latter also enters into the construction of cane bird cages, although through oversight no description of the latter was recorded. Assuredly, the coiled filler used in making the cradle and the circular, hanging tray on which provisions are stored is a form of basketry, as are palm figures and woven chair seats.

In other words, although baskets scarcely are to oe seen in Tajín, the Totonac use wickerwork, wrapped twine, coil without foundation, and, for the palm figures and chair seats, a technique akin

[22] The palm receptacle is flat-bottomed, with cylindrical walls, and is woven in checkerwork, double at the rim. Our informants do not know the source of these containers, which are sold in Papantla as *tenates*. Although there is no tradition of local manufacture, the receptacle has a Totonac name (pa¢aya). Such a basket is converted into a burden carrier by the simple expedient of tying the tumpline to the rim, passing its cords beneath the basket, to give support. Bread and other small purchases sometimes are carried from Panantla in a *tenate*, but its use is far from general.

to checkerwork. It is worth noting that these basketry stitches are used exclusively by men.

### WICKER BASKETS

The few baskets of local manufacture are all of wickerwork. At present, only Modesto González and Pascual Santes seem to try their hands at this craft. One notably poor bit of wickerwork (pl. 22, *f*) was made as a strainer for maize gruel; such colanders are not in general use, and a loosely woven cotton cloth usually functions as a sieve. The basket in question has warps of split bamboo. The weft of the base is a fiber twine, called *camoteca*, purchased in Papantla; that of the walls is the root of a vine known as *chápiso* (No. 156). Its slender root is scorched in a corn-husk blaze to permit the removal of the outer skin; the interior is "very white" and pliable. The other specimen illustrated (pl. 22, *b*) is likewise of *chápiso*, with the handle of *bejuco colorado* (No. 131).

### CRADLE

The cradle (pútaju) consists of an oval frame, coil-filled, and suspended from the house beams by four ropes. "Any" liana may be used for the hoop, but *chilillo* (No. 112) is particularly favored because it resists borers. A length of substantial thickness is cut with the machete and is bent to form an oval, being lashed securely at the overlap.

The coiled filler may be of liana, sometimes *zarza* (No. 252), which is said to wear well, despite frequent sousing of urine. Bark of *jonote* (Nos. 25, 100) also is used, but most prefer commercial twine for the coil; it is less durable, but simpler to handle, and replacement is easy.

The man makes the cradle. He holds the oval frame horizontally on his knees and, beginning at the rim, applies the coil without foundation spirally, working clockwise. The stitch is known rather aptly as *tela de araña* (spider web). As the center of the cradle is approached, the interval between stitches is shorter, but none is skipped. Since the form is oval and not circular, there is a gap in the center, which is "laced" together, using the same coiled stitch.

This cradle is superficially similar to that used by the Popoluca (Foster, 1940, pp. 14–15, fig. 7), although from the photograph of the latter the precise type of filler is not evident.

### HANGING FRAME

Technically, the hanging frame (*huíle*) differs little from the cradle, except that it is circular instead of oval and the filler usually is of *chápiso* root (No. 156), sometimes of *bejuco colorado* (No. 131). This swinging frame is an adjunct of almost every Totonac kitchen and forms a handy shelf on which to store provender. To protect the latter from rodents, a globular gourd is perforated and strung on the cord from which the wheel is suspended.

Today, these frames are poorly woven. One of the neatest we saw in Tajín (pl. 22, *d*) was made by a visitor from nearby San Miguel Pericos. His specimen is illustrated in preference to the model we had made, since the latter is a miniature and the filler is, moreover, twine of *jonote colorado*, instead of liana or *chápiso* root.

### CARRYING FRAME

It is said that formerly a coil-filled carrying frame (*huacal*) was used in Tajín. We saw but one fragment, in such an advanced state of disintegration that we could not be sure whether the filler actually had been coil without foundation. It turned out, in any case, that this particular specimen had been made by someone from Santo Domingo, near Coyutla.

According to description, the carrying frame consisted of two oval hoops, filled with coil of *jonote* (No. 25) or of a *Philodendron* (No. 126). The ovals were joined, by the same stitch, on all but one of the long sides, which was left open. Superficially, the frame must have been similar to those still current in the Villa Juárez area and to those carried today by itinerant traders from the Zacatlán district.

### NETTING

For good measure, netting may be mentioned here. It has been noted above (p. 79) that three men in Tajín know how to make casting nets. Unfortunately, we did not have opportunity of watching them work, but they are said to employ a diamond-shaped measure of wood and to start work at the "point" or apex of the net. Most nets used in Tajín are purchased in Papantla.

## WEAVING

Since early times, the Totonac have been known as producers of cotton and of cotton textiles (Sahagún 3: 129). Hueytlalpan paid tribute to Moctezuma in cloth (Relación de Hueytlalpan), as did Jojupango, later, to her Spanish *encomenderos* (Relación de Jojupango). Jonotla is said to have a brisk trade in cotton and woven materials, from the proceeds of which tribute was paid (Paso y Troncoso 5: 130–131). In "Cempoala," the Totonac "principals" were elegantly garbed in *ricas mantas*, and the latter also figure among their gifts to Cortés (Díaz del Castillo 1: 171).

Too, it is evident that the Huasteca produced highly prized textiles (Sahagún 3: 131–132), which were acceptable to the Mexicans as tribute (Tezozomoc, pp. 110, 129). In fact, a tradition of good weaving appears to be found pretty much along the whole Gulf coast, for the Maya, too, were noted for their excellent woven products (Ponce 2: 390–391). Today, among the Popoluca, whose culture as a whole appears very modest, weaving is described as the "crowning glory" of their handiwork (Foster, 1940, p. 14).

Cotton weaving is one of the few old crafts which has survived in Tajín, and 10 women—all but 3 either middle-aged or elderly—still produce textiles on a belt loom. A few weavers in outlying parcels may have escaped attention, but a relatively small number of women is involved.

Ordinarily, as a young girl, a weaver learns from her mother, her elder sister, or her grandmother. Although the older women complain that girls are not interested in weaving, there are two cases in which a young woman, already adult, has expressed interest and has asked her mother or a friend to teach her. There is a modest but steady demand for hand-woven products in Tajín, but current prices do not make production very appealing from a monetary standpoint.

Both as regards quantity and quality of output, cotton weaving in Tajín is on the downgrade. We were able to purchase a few pieces, made some years ago, and with them current products compare most unfavorably. The older specimens are of handspun thread, finely woven (pl. 30, *c*, *d*), whereas modern textiles usually are of commercial thread, sloppily and coarsely manufactured (pl. 30, *f*, *g*). As a corollary of this decline, relatively little native cotton is grown today. Isolated plants of white lint cotton still are to be seen in house clearings, but the brown lint form has all but disappeared. Since cotton is used primarily for weaving, there is little interest in maintaining the native plant.

## TEXTILE PRODUCTS

Today, local woven textiles are limited to three products:

*Manteles* (mantíliš) (*sic*) (pl. 29).—These are simple squares or rectangles, whose size varies from 33 by 39 to 69 by 92 cm., exclusive of fringe. The smaller ones are used to wrap tortillas. Larger ones serve occasionally as tablecloths or as hand towels (for guests), but their principal use is to cover the contents of the wooden tray which is borne on the head. The cloth is so arranged that the ornamental fringe hangs over the edge of the tray, above the eyes. Commercial cloth may be used as a substitute, but among the women it is rather a matter of pride to use a home-made product. Accordingly, there is a certain demand for the *mantel*.

At spaced intervals, the latter has extra thick weft threads woven into the fabric, which result in a corded effect. Usually, in the course of weaving, these are plucked to form loops or pile on the right side. Such loops are combined in simple designs, either geometric or conventionalized (pp. 231–235). This technique is one widely used in Mexico and often known as *confitillo;* the chances are that it is not native, but introduced.[23]

Sometimes the contrast between the background and design is emphasized by using brown lint cotton for the latter, heavy white thread for the former.

Ordinarily, the *mantel* terminates in simple, short fringe at the end where the weaving was started; usually this is simply twisted or knotted. But at the terminal end, a considerable length of warp is left, which is tied into elaborate and varied fringe (p. 235).

*Ruedos* (apoštíkat, a·kpuštíkat).—These are long, narrow strips, some almost sashlike. Measurements, in centimeters, of seven specimens purchased at random are as follows: 28 by 70, 32 by 99, 35 by 81, 37 by 83, 37 by 97, 46 by 93, 45 by 88. Some, proportionately wider (43 by 76, 57 by 118), are used as hand towels. The narrower ones are twisted and rolled to form the pad on the head when burdens are carried—water from the arroyo, or the wooden tray with assorted contents. Regardless of proportion or function, the Totonac name is the same.

The *ruedo* is little ornamented. Pile designs are not used. Occasionally brown and white lint cotton is combined, resulting in a sort of shot-color effect, which is very pleasing. Other ornament may consist of a couple of colored stripes, of commercial embroidery thread, woven into each end, or a simple cross-stitch design may be added as a border.

[23] Information from Irmgard Weitlaner Johnson, who has found the same technique employed in old Spanish textiles.

Fringe is short at one end, and adjacent warps, often pairs, are simply twisted or knotted; on one specimen, the fabric has been overcast to prevent raveling. At the other end, where the weaving terminates, the fringe is longer and receives more attention, occasionally approaching that of the *mantel* in elaborate knotting.

A couple of old specimens made by Luz Valencia are simply knotted at one end. At the other, weaving alternates with one or more bands of loose, unwoven warps (pl. 30, *h*), which form a decorative border. On the illustrated specimen, the loose warps have been caught to the fabric by a stitch similar to our hemstitching, to prevent raveling.

*Coladeras* (pu·ɸíkin, pʌ·sikin).—Tsese are essentially utilitarian articles, either rectangular or approximately square. Measurements, in centimenters, of four purchased specimens are: 37 by 49, 38 by 49, 42 by 48, 46 by 55. Weaving deliberately is open and coarse (pl. 30, *a*). Again, brown and white lint may be combined to give a mottled effect, or a few rows of colored embroidery thread are used at each end as weft. As usual, the fringe is short at one end, longer at the other; the latter is knotted, but quite simply.

### MATERIALS

Until recent years, the native perennial cotton, of both brown and white lint, was used exclusively for weaving. The brown lint, incidentally, is not fast color, and after repeated laundering turns a light beige.

With the fingers, seeds are removed from the bolls; in particular, care is taken to extract the tip of the seed, where the fiber is united, otherwise the thread will break as it is spun. The cotton then is fluffed between the hands and beaten. The following accounts of the latter treatment are from description; we have not witnessed the process.

According to Josefina Pérez, once the seeds are removed, the lint is spread on a woven mat, which lies on top of dry banana leaves. With a light wooden wand in each hand, the cotton is beaten until it becomes light and fluffy. It then is doubled and beaten again, successively.

María Loreto gives a similar description. Dry banana leaves are extended carefully on the ground. On top, is placed a woven mat, and on top of it, the cotton. The latter then is beaten with great care, to avoid packing; in time, the cotton spreads until it corresponds to the form and size of the mat. It then is doubled in half and is beaten anew, following which it is folded once more and again is beaten. This process is continued until the fiber forms a small bale. For some obscure reason, at the end of the treatment, the cotton is supposed to emerge in the form of a long, continuous strand, about 3 cm. (in width?), which is rolled into a ball and later is spun.

Nowadays, commercial thread (*hilaza*), purchased in Papantla, serves either as a warp or woof. For the heavy, ornamental weft, a thick, loosely twisted three or four-strand commercial thread is used. It is marketed as *pabilo* and apparently is manufactured chiefly for candlewicks. This, however, is given special treatment. The strands are opened and are respun with the whorl. To splice, fibers of both ends are pulled, until they are soft and spread; then they are twisted together with the fingers and subsequently spun with the whorl.

It is said, and probably correctly, that commercial thread is stronger, involves less work, and now that the cotton plant is scarce, is more readily available. To a certain extent, native cotton still is used, but most weavers prefer commercial threads which greatly reduce the chore of spinning.

A person who wishes to have a textile made, sometimes gives a weaver sufficient cotton for two of the specimens desired. She weaves one for the donor of the fiber, and one for herself; the material used in the latter is considered payment for her labor.

### SPINNING

The spindle consists of a short, slender wooden rod, weighted near the base by a perforated clay whorl (lisi·wit) of local manufacture. It is said

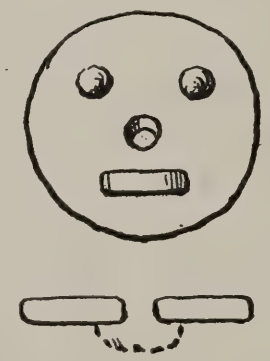

FIGURE 54.—Clay spindle whorl. Sketch of specimen used by Ignacia Hernández. Approximately natural size.

that in Talaxca dependence is exclusively upon clay or stone whorls found archeologically. We have seen one Tajín whorl which is subconical; another is a disk, about 3 cm. in diameter. On the lower face of the latter are three excrescences, so arranged as to give the impression of a face (fig. 54).

A small pottery bowl or a decorated calabash is placed on the lap, and on its floor the tip of the spindle revolves. The bowl is home-made; the calabash is of dubious provenience. One used by Nicolasa de León is though by her to be from the State of Puebla; the motif is typically Olinalá, although the general effect is somewhat different. We watched three women spin:

Nicolasa de León holds the unspun cotton in the left hand and extends her arm, with the hand almost upright. With the right hand, she turns the spindle, supporting it between the thumb and second finger, and revolving it clockwise with the index finger. It moves rapidly, resting on the floor of the calabash. When a short length of thread has been twisted, she revolves the spindle in the opposite direction, removes her hand, and the thread winds itself on the rod.

Ignacia Hernández holds raveled *pabilo* in her left hand, with the arm almost upright. With the right hand, she twirls the spindle rapidly, clockwise, between the thumb and the first two fingers. Once the whorl is set in motion, it continues for some moments to revolve rapidly without further assistance on the floor of the clay dish, while the hand is removed and is moved upward along the *pabilo*, to feed the latter, without knots, to the spindle. When a short length of thread is completed, the twirling is halted, and the spindle is turned more slowly (counterclockwise?), winding the prepared thread on its shaft. During the winding, the left arm is extended almost horizontally to the side. In short, the left arm is in a nearly upright position as the thread is being formed (pl. 28, *c*), in a horizontal position while it is being wound (pl. 28, *f*).

Carmen Pérez Reyes indulges in less violent arm movements in the course of spinning (pl. 28, *a*, *b*). She twirls the spindle clockwise, both as the thread is being formed and as it is wound on the shaft.

Prepared thread either is wound in balls or on a stick and is stored until required.

### WARPING

Before warping, one calculates the length of the textile to be made. Measurement is in terms of "elbows" (*codos*, paka), that is, the distance from the elbow to the middle finger; fractions are expressed by *cuartas*, the distance between the thumb and little finger, with the hand opened wide. A *ruedo*, for example, may be planned at 3 *codos*, plus 1 *cuarta*. Width calculations are based upon the number of warp threads.

Once the approximate length of the fabric is determined, three stakes are set vertically in the ground, within the house or outside. The terminal ones give the over-all length, plus a comfortable margin. The center post is alined, but is only one-third or one-fourth the distance from the first post. Height of the stakes varies with individual weavers; irrespective of the width of the textile, Carmen Pérez Reyes uses posts only 20 cm. tall.

Warping (puλuyunúma) takes place in figure-8 fashion over the three stakes (pl. 28, *g*; fig. 55):

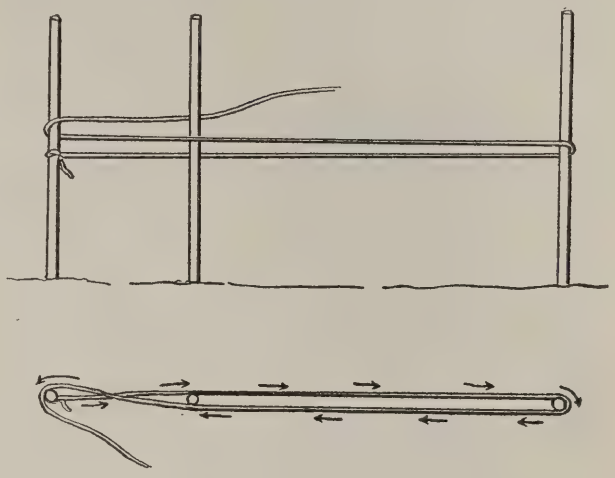

FIGURE 55.—Manner of warping.

María Loreto ties the end of the warp (toyúnu) about the middle of the first stake, which is on her left. Then, as shown in figure 55, she winds the thread until the desired number of warps has been prepared.

Carmen Pérez Reyes follows the same procedure, but starts at the right instead of at the left. Unlike Doña María, who has the thread wound on a short stick, she has hers in a ball, which reposes in a wooden tray, on the ground to her right. One day, during the process of warping, Doña Carmen hastily sent her daughter for a handful of maize kernels, which she tossed into the tray, "to be sure there would be sufficient thread."

When the necessary number of threads has been wound on the posts, a string is passed through the warps on each side of the middle post, and tied loosely, to preserve the figure-8 formation and to prevent tangling.

Regardless of whether the thread is handspun or commercial, at this point it is customary to dip the warp into liquid from the *nixtamal* or into a mixture of ground tortillas and water.[24] This stiffens the threads and simplifies handling, although some women condemn the procedure, saying that it darkens the threads, which do not bleach "until the cloth is almost worn out." The knobbed end sticks of the loom then are passed

[24] The Chinantec are said to daub the cotton with water containing maize paste "during the weaving" (Bevan, p. 81).

through the loops of the dripping warp, which still is tied together, and the whole thing is draped over a clothesline to dry.

### LOOM

The belt loom alone is found in Tajín. It is called simply *palos* (sticks) and the usual Spanish term, *telar*, seems unknown.

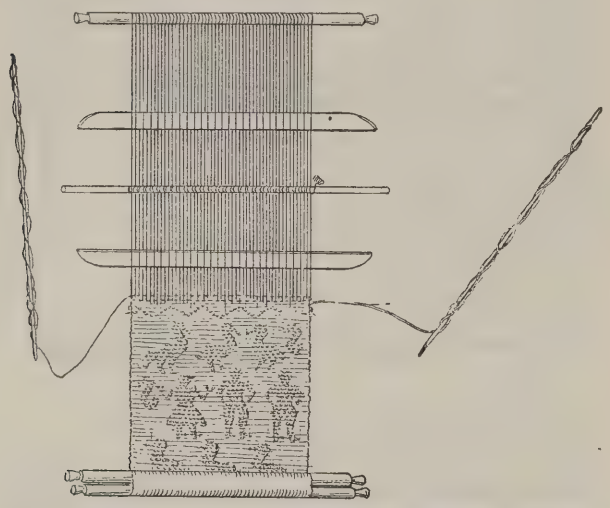

FIGURE 56.—Loom. See text (p. 230) for details.

A sketch of the loom is shown in figure 56. The equipment is simple and is made by any handy man, not necessarily by a carpenter. For the knobbed end sticks, *zapote chico* or *escolín* (Nos. 191, 338) generally is used; for the shed and batten, *alzaprima* (No. 206). The sticks vary in length and weight, and a weaver may have two or three sets, from among which she selects that which best fits the textile she plans to make.

Every loom consists of two end bars (tulúnu) (fig. 56), which are knobbed. A rope is tied to a post or other convenient upright, and each end then is attached to a knob of the bar at the far end of the loom. The bar nearest the weaver rests against her abdomen. A rag or old tumpline passes about her waist, at the rear, and is tied to the knobs of the near end bar (pl. 28, *d*). Weaving is done closer to the horizontal than the vertical.

The batten and shed are of the same shape (fig. 56), both sharpened to a blade along one edge, and both known by the same name (*machete*, makčána [*sic*]). Every loom includes either an additional end bar (fig. 56) or an extra *machete*, whose function is to facilitate rolling the completed fabric and bringing the new work area closer to the weaver. The extra stick is laid on top of the textile, against the end bar which rests on the lap. Both are turned away from the weaver so that the fabric is rolled on them (pl. 28, *e*), and the belt strap is adjusted to the new length.

The heddle (pasákna) is a light-weight wooden rod, about the same length as the other sticks. A width regulator (štampistúkumu) is similar, but shorter. It does not appear in figure 56, for it is attached to the fabric, beneath the work surface. The ends are perforated to receive the tip of a long thorn, which is thrust through the selvage at either side and into the perforation of the bar. The latter is moved constantly forward, as the work progresses, and seldom is more than 2 cm. behind the current weft. In this way, the textile maintains uniform width.

Another light-weight wooden bar completes the equipment. It is the shuttle (n kwat), on which the weft is wound. If a decorated *mantel*, with pile ornament, is being made, two shuttles are used, one for the light-weight weft, the other for the heavy decorative cord.

### SETTING UP THE LOOM

As described above, the knobbed end bars are thrust through the warp; that at the far end is attached to a post or tree, and the near bar is affixed to the weaver's body, by a cloth or strap which passes across the back of her waist. My impression is that the smaller part of the figure-8 which results from the warping is adjacent to the body of the worker, but notes are not specific.

The batten is slipped into place, to separate the warps more definitely into an upper and lower shed, following which each warp of the upper shed is attached to the heddle:

We watched Carmen Pérez Reyes perform this operation. She inserts a loose thread—embroidery cotton, commercial string, or any soft, but strong cordage—between the two sheds. It enters from the right and is carried through to the left, where it is tied to the last warp. The ball of reserve thread, to which the strand is atached, remains on the ground at her right.

Wrapping the heddle starts at the left. A loop of the thread is lifted with the fingers of the right hand and is pulled to the surface; it is passed over the tip of the heddle and, at the same time, catches one of the warps of the upper shed to it. Looping alternates; for one warp, the thread passes over the heddle toward the

weaver; for the next, away from her. The heddle is held in the left hand and gradually is extended to the right, over the upper shed, as the work progresses. Work proceeds from left to right across the top of the upper shed, and as thread is consumed, the ball on the ground is unwound. Each loop which goes over the heddle is held in place with the index finger of the left hand, to prevent slipping.

Plate 28, *d* shows María Loreto laboriously rigging the heddle. The process is identical with that described above, but she has started at the right instead of the left. This is not her standard practice, but it is many years since she has attempted to weave and some details have escaped her; later, she realized that it would have been easier to have started at the left. Note that she has the batten turned upright, to keep the two sheds well separated.

Once the heddle is set, the shuttle, on which the weft is wound, is thrown through, between the separated warps. The shed is changed and the shuttle thrown back again. Four or five weft threads are inserted thus and are beaten into place with the batten. They are scratched with a small pointed implement (see below) until the threads are evenly spaced.

Next, the loom is turned, so that the four or five rows of woof lie at the far end, and the end bar which formerly reposed on the lap of the worker now is tied to the post. These preliminaries terminated, the weaver now is ready to begin forming the fabric.

### WEAVING

Below are listed the successive steps in weaving, beginning just after a newly inserted weft has been beaten home:

1. Batten removed and placed on top of shed bar. Weaver leans forward, releasing the tension on the warp (pl. 28, *e*). Her right hand clutches both shed and batten, which are turned away from the body two or three times, to loosen the warp. At the same time, the heddle is raised with the left hand and the warps attached to it are forced to the upper surface.

2. Batten passed beneath the warps which have just been raised by the heddle.

3. Weft beaten home with batten.

4. Batten turned on end, to make room for shuttle.

5. Shuttle thrown through, between the two sheds.

6. Weft beaten home with batten.

7. Batten removed.

8. Shed (on far side of heddle) turned to vertical position to shift warps, retiring those lifted previously by heddle.

9. Batten inserted and weft beaten home.

10. Batten turned to vertical position and shuttle passed through.

11. Weft beaten home.

12. Batten removed and heddle lifted, as described in first step above.

From time to time, in order to space the threads evenly, the fabric is scratched vigorously with a pick (liswełkni?), often a flat, bamboo instrument, about a centimeter in width and sharply pointed at one end. One weaver uses a deer bone (laskni?), 8 or 9 cm. long, which terminates in a point; she does not recall where or when she acquired it. It is said that in Talaxca, a thorn or a fish (*sábalo*) bone is preferred.[25]

When not in use, the shuttle may lie across the top of the warps, on the far side of the heddle; on the newly formed fabric, at the waist of the worker; or on the ground. If heavy, ornamental woof is used, there are two shuttles, one for the normal weft, the other for the cordage.

To form a design, the weaver uses the pick to raise a loop of the heavy woof to the surface. She plucks with her right hand, and with the index finger of her left, holds the loop in place until the succeeding one is formed. If the shuttle has been thrown from left to right, and the free end of the *pabilo* is on the right, she starts plucking at the left since, owing to the pile, she must be able to draw additional thread from the shuttle. If the latter has been thrown from the right, she starts at that side. The weft thread not in use at the moment is carried along the selvage, as a loop.

Designs are "carried in the head"; Nicolasa de León claims to be following those used by her mother years ago. Sometimes, at least, threads are counted; sometimes the weaver merely guesses at the distance. Figures of men or animals are built feet first, so that the figure is standing upright when completed.

Sometimes warp threads are double. Other than this, there is no variation of simple under-over weaving. Despite their simplicity, Totonac textiles are very pleasing and some, especially those manufactured a few years ago, are of excellent quality.

### WOVEN ORNAMENT

The border of colored thread which, upon occasion, decorates the *ruedo* and the strainer, has been mentioned above. Occasionally *manteles* are similarly adorned, but ordinarily they are all white, or white combined with brown lint cotton. Without exception, they are decorated with geometric

[25] The Chinantec are said to use a pointed bone or a cactus spine (Bevan, p. 81).

or conventionalized motifs, formed by looping the heavier weft on the upper or right side, as the textile is woven. Of *manteles*, we purchased 22 specimens, of which 11 are modern, the others "old"—but probably not more than 10 years at the most.[26] From the discussion below, it will be seen that the decoration of *manteles* appears to have shifted considerably in the course of the past few years; this conclusion, we believe, does not result exclusively from the smallness of our sample.

[26] Eight weavers are represented: Carmen Pérez Reyes, 7 specimens; Ignacia Hernández, 4; María Antonia Méndez, 4; Nicolasa de León, 3; and Luz Valencia, Benita Isidro, Josefina Díaz, and María Hernández, 1 apiece. Owing to an arm injury, María Antonia Méndez no longer weaves, nor does Luz Valencia, because of age and infirmity.

There is a high degree of interdependence among most of these eight women. Benita Isidro and Josefina Díaz are daughters of Carmen Pérez Reyes; she taught them, as well as María Antonia Méndez, a neighbor, to weave. Ignacia and María Hernández are sisters; Nicolasa de León is their sister-in-law; all three live in adjacent houses.

*Borders.*—All *manteles* have some sort of geometric border, at the start and finish of the piece. In some cases, this is confined to a simple row or double row of upraised loops (fig. 57, *a*, *a'*); usually, various motifs are combined. Border designs from our 22 *manteles* are shown in figure 57 and their distribution given in table 13.

Several border motifs are found among both new and "old" pieces (fig. 57, *a–c*). Others are confined to the older specimens (fig. 57, *d*, *f*, *g*), while two (fig. 57, *e*, *h*) are to be seen only among current products. One motif (fig. 57, *h*), prominent in the recent *manteles* made by Carmen Pérez Reyes and one of her daughters, has no Totonac name. This, plus the fact that not one of the older specimens carries this design, suggests that it is a recent addition to the local repertoire.

There is one further suggestion of change in border treatment during recent years. Among the older pieces, six have a quite different border at each end; two more correspond in major features but have differences in detail (noted as one-half, in table 13). In short, most of the older specimens have asymmetrical borders, while the more recent products show a greater tendency toward symmetry (table 13).

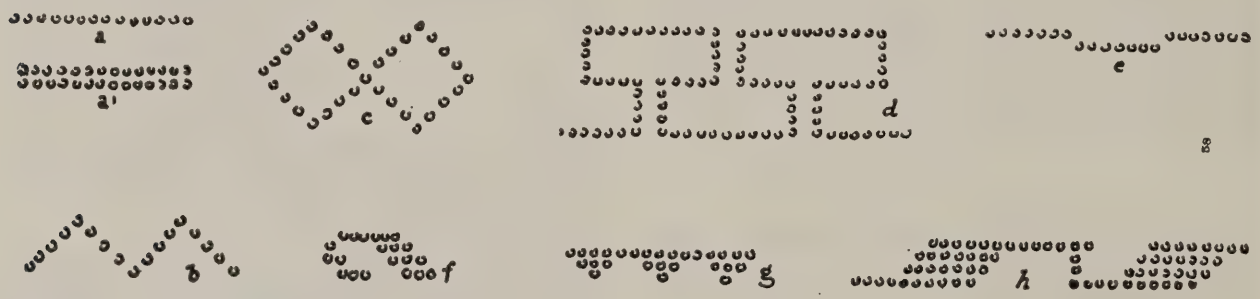


FIGURE 57.—Textile designs: *Mantel* borders. Each circle represents a loop of heavy weft on the right side of the fabric. *a* and *a'* are known as talakašlit?ni; both *b* and *c* are called tasku?li. No names were recorded for the other designs, save *h*, which goes by the Spanish term of *pemoles*, and which is said to have no Totonac equivalent. The distribution of these elements is given in table 13.

TABLE 13.—*Textile ornament* [1]

| Designs | "Old" *manteles* | | | | | | | | | | | Recent *manteles* | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Luz Valencia | Ma. Antonia Méndez | | Nicolasa de León | María Hernández | Ignacia Hernández | | | | Carmen Pérez Reyes | | Carmen Pérez Reyes | | | | | Benita Isidro | Josefina Díaz | Ma. Antonia Méndez | Nicolasa de León | |
| | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| Borders: | | | | | | | | | | | | | | | | | | | | | | |
| Motifs: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 57, *a*, *a'* | × | × | × | × | | × | × | × | × | × | × | × | × | × | × | × | | × | × | × | × | |
| *b* | | × | | × | × | | | | × | | | × | | × | × | | | × | × | | × | |
| *c* | | | × | | | | | | | | | × | | × | | | | | | × | | × |
| *d* | | | | | | | | × | | | | × | | × | | | | × | | × | | |
| *e* | | | | | | | | | | × | | | | | | | | | | | | |
| *f* | × | | | | | | | | | | | | | | | | × | | | | | |
| *g* | | | | | | | | | | | | | | | | | | | | | | |
| *h* | | | | | | | | | | | × | | | | | | | | | | | |
| Asymmetrical | × | ½ | | ½ | × | | | × | × | × | × | × | | | | × | ½ | | × | ½ | | × | × |

[1] Decorative elements are listed at the left, with references to corresponding text figures. Individual textiles, all of which are in my possession, have been numbered to avoid ambiguity.

TABLE 13.—*Textile ornament*—Continued

| Designs | "Old" *manteles* | | | | | | | | | | | Recent *manteles* | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Luz Valencia | Ma. Antonia Méndez | | | Nicolasa de León | María Hernández | Ignacia Hernández | | | | Carmen Pérez Reyes | Carmen Pérez Reyes | | | | | | Benita Isidro | Josefina Díaz | Ma. Antonia Méndez | Nicolasa de León | |
| | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 |
| **Fillers:** | | | | | | | | | | | | | | | | | | | | | | |
| Motifs: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 58, *a* | | | | | | | | | | × | | | | | | | | | | | | |
| *b* | | | | | | | × | | | × | | | | | | | | | | | | |
| *c* | | | | | | | | | × | | × | | | | | | | | | | | |
| *d* | | | | | × | | | | | | | | | | | | | | | | | |
| *e* | | | | | | | | | | | | | | | | | | × | × | × | | |
| *f* | | | | | | | | | | | | | | | | | | ×× | | | | |
| *g* | | | | | | | | | | | | | | | | | | × | | | | |
| *h* | | | | × | | | | | | | | | | | | | | × | | | | |
| *i* | | | | | | | | | | | | | | | | | | × | | | | |
| *j* | | | | | | | | | | | | | | | | | | × | | | | |
| *k* | | | | | | | | | | | | | | | | × | | | | | | |
| *l* | | | | | | | | | | | × | | | | | | | | × | | | |
| *m* | | | | | | | | | | | | | | | | | | × | | | | |
| *n* | | | | | | | | | | | | | | | | | | × | | | | |
| *o* | | | | | | | | | | | | | | | | | | × | | | | |
| *p* | | | | | | | | | | | | | | | | | | × | | | | |
| *q* | | | | | | | | | | | × | | | | | | | | | | | |
| Shape indeterminate | | | | | | | | | | | | | | | | | | | | | × | × |
| **Major motifs:** | | | | | | | | | | | | | | | | | | | | | | |
| Geometric: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 59, *a* | | × | | | | | | | | | | | | | | | | | | | | |
| *b* | × | | | | | | | | | | | | | | | | | | | | | |
| *c* | | | | | | | | | × | | | | | | | | | | | | | |
| *d* | × | | × | | × | | | × | | | | | × | | | | × | | | | | × |
| *e* | | | | | | | | | | | | | | | | | | | | | × | |
| *f* | | | | × | | | | | | | | | | | | | | | | | | |
| *g* | | | | | | | | | | | | | | | | | | | | | | |
| Human: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 59, *h* | | | | | | | | | | | × | | | × | × | | | | × | | | |
| *i* | | | | | | | | | | | | | | × | | | | | | | | |
| *j* | | | | | | | | | | | | | | | × | × | | × | × | × | | |
| *k* | | | | | | | | | | | | | | | | | | | | | | |
| Plant: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 59, *l* | | | | | | | | | | | | × | | | | | | | | | | |
| Birds: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 60, *a* | | | | | | | | | | × | | | | | | | | | | | | |
| *b* | | | | | | × | | | | | | | | | | | | | | | | |
| *c* | | × | | | × | | | × | | | × | × | | × | | | | | | × | | |
| *d* | | | | | | | | | × | | | | | | | | | | | | | |
| *e* | | | | | | | | | | | | | | | × | × | | × | × | | | |
| *f* | | | | | | | × | | | × | | | | × | × | | | × | × | × | × | × |
| *g* | | | | | | | | | | | | | | | | | | | | | | × |
| *h* | | | | | | | | | | | | | | | | | | | | | | |
| *i* | | | | | | | × | | | | | | | | | | | | | | | |
| *j* | | × | | | | | | | | | | | | | | | | | | | | |
| *k* | | | | | | × | | × | | | | | | | | | | | | | | |
| Other animals: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 61, *a* | | | | | | | | | | | | | | × | | × | | | × | | | |
| *b* | | | | | | | | | | | | | | | | | | | | | | |
| *c* | | | | | | | × | | | | × | | | | | | | | | | | × |
| *d* | | | | | | | | | | | | | | | | | | | | | | |
| *e* | | | × | | | | | | | | × | | | | | | | | | | | |
| *f* | | | | × | | | | | | | | | | | | | | | | | | × |
| *g* | | | | | × | | | | | × | | | | | | | | | | × | | |
| *h* | | | | | | | | | | | | | | | | | | | | | | |
| *i* | | | | | | | | | | | | | | × | | | | | | | | |
| *j* | | | | | | | | | | | | × | | | | | | | | | | |
| *k* | | | | | | | | | | | | | | | × | | | | | | × | |
| *l* | | | | | | × | | | | | | | | | | | | | | | | |
| *m* | | × | | | | | | | | | | | | | | | | | | | | |
| Indeterminate: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 59, *m* | | | | | | | | | | | | | | | | | | | | | × | |
| **Fringe:** | | | | | | | | | | | | | | | | | | | | | | |
| None | | | | | | | | | × | | | × | | | | | | | | | | |
| Knots: | | | | | | | | | | | | | | | | | | | | | | |
| Fig. 62, *a* | | | × | | | | | | | | | | | | | | | | | | × | |
| *b* | | | | | | × | | | | | | | | | | | | | | | | |
| *c* | | | | | | | × | × | | × | × | | × | | | | | | | | | |
| *d* | | | | | | | | | | | | | | | | | | | | | | |
| *e* | × | × | | | | | | | | | | | | × | × | × | × | × | × | × | | |
| *f* | | | | | | | | | | | | | | | | | | | | | × | × |
| *g* | | | | × | × | | | | | | | | | | | | | | | | | |

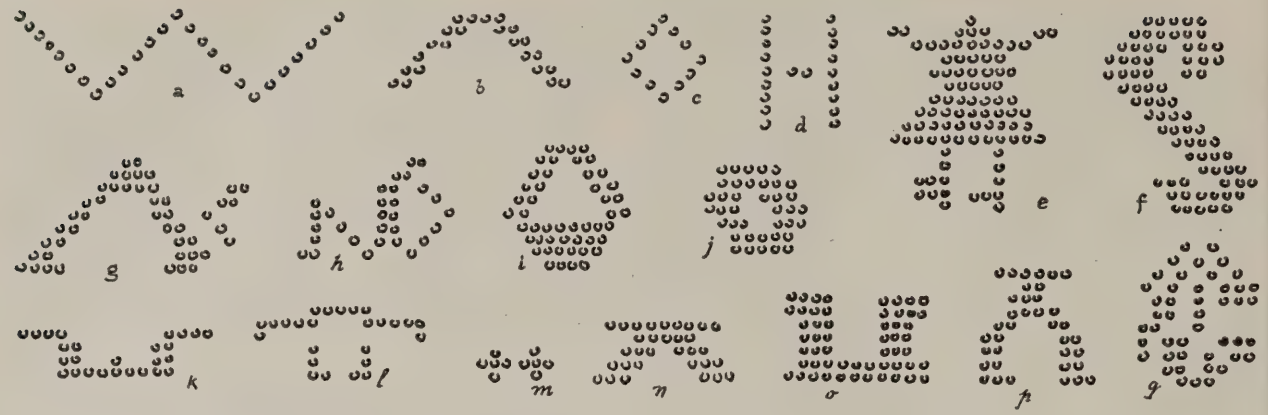

FIGURE 58.—Textile designs: *mantel* fillers. None is named. The distribution is shown in table 13.

*Fillers.*—Simple geometric designs, usually symmetrical, but sometimes amorphous (fig. 58, *h*, *q*) often are used to fill the space between major motifs. Frequently, this space evidently has resulted from miscalculation in placing the major designs. Fillers are used in both old and new lots, but the motifs are quite different. Some fillers (fig. 58, *a–e*, *i*, *m*, *q*) are confined to the older specimens; others (fig. 58, *f–h*, *j–l*, *n–p*) occur exclusively among new products.

*Major motifs.*—Sometimes the major designs are geometric (fig. 59, *a–g*); they likewise show perceptible differences between old and new textiles. Only one motif (fig. 59, *d*) occurs in both lots (table 13); among the older specimens it is a discrete design; among the newer, an all-over pattern.

Conventionalized humans (fig. 59, *h–k*) appear to be essentially recent, although one old specimen, woven by Carmen Pérez Reyes, has the figure of a woman, apparently holding a flower (fig. 59, *i*). Among recent *manteles*, the human figure is confined to specimens made by this same weaver, by her two daughters, and by a woman said to have received training from her. In other words, con-

FIGURE 59.—Textile designs: Major *mantel* motifs. *a–g*, Geometric; *h–k*, human; *l*, plant; *m*, indeterminate. Names were recorded for only two designs (*i*, *muñeca*, doll; and *l*, šanat, flower). The occurrence is given in table 13.

ventionalized human figures seem to be rather recent and limited to what might be called the Pérez Reyes school.

One *mantel*, woven during our stay, has a plant motif (fig. 59, *l*). Another design, (fig. 59, *m*), is not readily identifiable; it may have been inspired by the double-headed eagle (cf. fig. 60, *j*, *k*).

Bird figures are popular (fig. 60; table 13) but, for the most part, the more elaborate designs are old. In some cases, a simplification of the older motifs is evident; for example, figure 60, *e* and *g*, found only among newer textiles, apparently are derived from figure 60, *c*.

Other animal forms are shown in figure 61. Again, the more elaborate patterns (fig. 61, *c*, *e*, *f*, *m*) tend to occur among the textiles woven some years ago (table 13).

In summary, there seems to be a certain time difference in the ornament of *manteles*. Border treatment differs; filler motifs are entirely distinct. Moreover, there have been shifts in major motifs. Some of the older designs apparently have been abandoned; others have been modified; and a number of new design elements evidently have been introduced.

It seems probable that, as a whole, these designs are to be considered European. Embroidery produced by the Totonac during the late nineteenth century certainly seems to be European-inspired and, as noted above, even the technique of producing designs by raising the weft to form a pile, probably is of Spanish introduction (ftn. 23, p. 227). In short, presumably we are dealing largely with European traits—perhaps introduced long ago—but traits which have been revamped in the local milieu.

### FRINGE

All but 2 of our 22 *manteles* have the warp ends tied in fringe, at least at the end where the weaving terminates. At the initial end, one specimen (No. 19) has no loose warps. Most have them simply gathered in small clusters and twisted to form threads of several strands, which are not knotted.

However, at the terminal end, the fringe may be quite elaborate (pl. 31; fig. 62). Several adjacent warps are handled as if they were a single thread, being tied in groups of two (fig. 62, *a*, *b*) or of four (fig. 62, *c–g*). Rarely is more than one kind of knot found on the same specimen (table 13).

The various clusters of warps are tied close to the fabric. Then the strands are divided; half are passed diagonally to the left, and half to the right, where they are tied anew, with strands from adjacent knots; the result is a sort of lattice work (pl. 31). As a rule, the same knot is repeated throughout. In one case, the same knot (fig. 62, *g*) has been repeated several times, without dividing the warps, and thus forms a series of strips (pl. 31, *e*) which resemble work generally known in Mexico as *macramé*. Occasionally, separate miniature tassels give a finishing touch to the fringe (pl. 31, *a*, *c*, *d*).

In addition to the specimens listed in table 13, knots *e* and *f* of figure 62 sometimes appear on textiles other than *manteles*. We have five *ruedos*, all tied with *e* (one each by Ignacia Hernández, Carmen Pérez Reyes, and María Loreto, and two by Luz Valencia). Two specimens woven by Luz Valencia are too wide to fall within the typical *ruedo* group, and one informant suggests they might be considered towels (*toallas*); both are knotted with *e*. In addition, three *coladeras* have knotted fringe; one, by Luz Valencia, has knot *e*; two, by Carmen Pérez Reyes, knot *f*.

Of the various knots shown in figure 62, there seem to be marked individual preferences; out of the total of seven, no weaver seems to employ more than three. *d* is particularly favored by Ignacia Hernández, who however, has used *e* on a specimen not included in the table. Carmen Pérez Reyes uses *d* and *f* on *manteles*, *e* on an unlisted *ruedo*, and *f* on two *coladeras*. She appears to favor *f*, and both specimens made by her two daughters likewise show this same knot. María Antonia Méndez uses *a*, *f*, and *g*, while Nicolasa de León employs chiefly the latter; in once case, she has combined it with *b*.

In our small sample of 22 pieces, *a*, *c*, and *e* are confined to the older specimens; *b* and *f*, to the newer ones; *d* and *g* appear in both lots.

### EMBROIDERY

A few decades ago, Totonac women wore elaborately embroidered costumes; today, embroidered blouses, and sometimes skirts, are popular, especially for fiesta wear. At present, only the decorative aspect will be considered; a discussion of clothing in general will be reserved for Part 2 of this monograph.

Some of the embroidered skirts made and worn by Totonac women during the latter years of the nineteenth century and the early years of the present, are extremely handsome. They are simple, sacklike affairs, open at top and bottom; most are of commercial muslin, but an occasional one is hand-loomed. Embroidery is particularly heavy about the bottom but usually extends, although less densely, over most of the skirt. The few examples

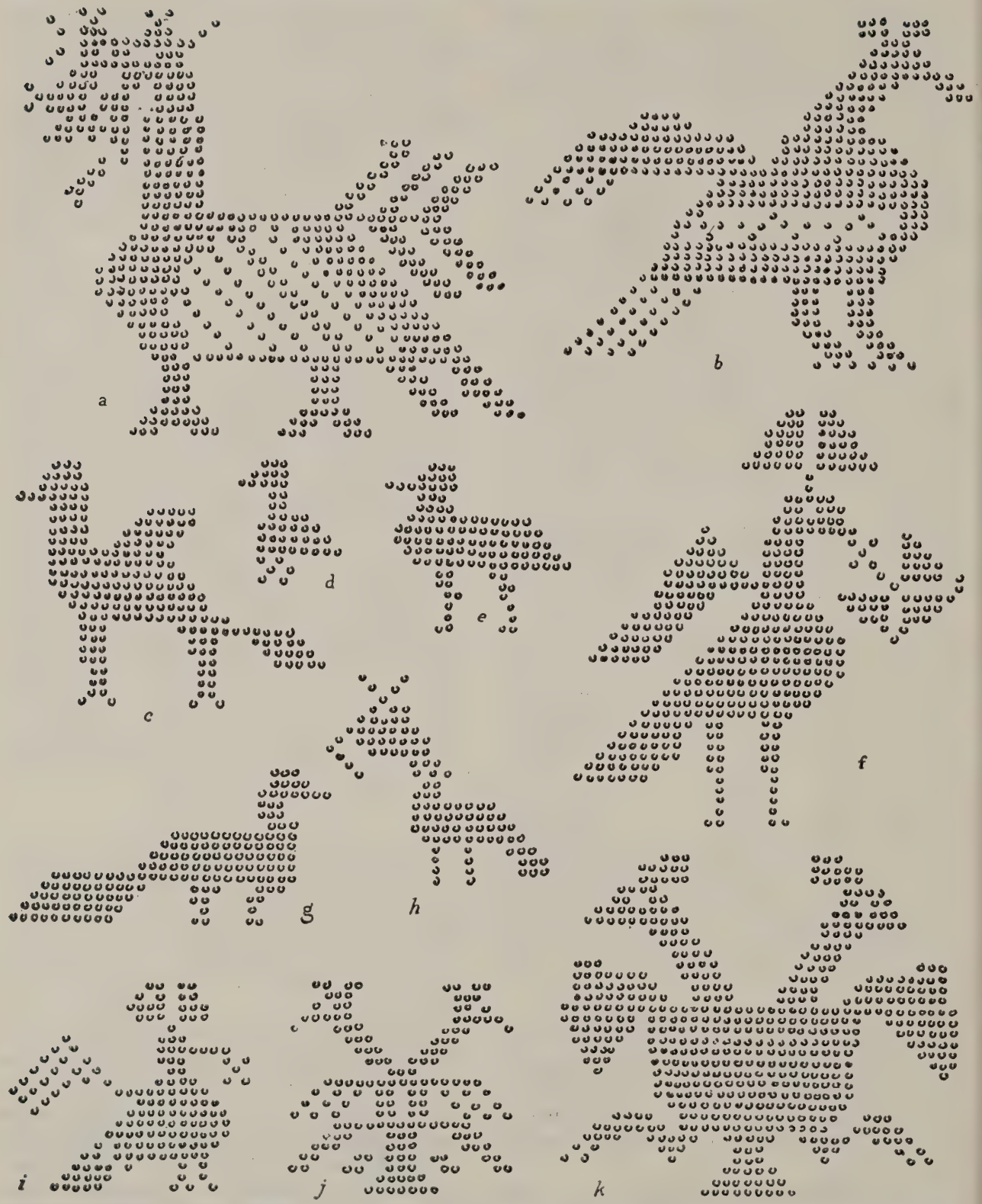


FIGURE 60.—Textile designs: Major *mantel* motifs. Bird forms. *a*, Presumably represents a turkey; *c* is considered a kind of dove (*torcasa*); *g* is identified by one informant merely as a bird (*pájaro*) by another, as a dove (*paloma*). The distribution is shown in table 13.

FIGURE 61.—Textile designs: Major *mantel* motifs. Various animal forms. *a–c* are felines (*a, b, onza; c, tigre*). *d* is a deer and *e* probably is the same; *f* is said to be a fox (*zorra*); *g*, a dog (*perro*); *h*, a sheep (*borrego*); *i*, a horse (*caballo*). Names were not recorded for the remaining designs. The distribution of these elements is shown in table 13.

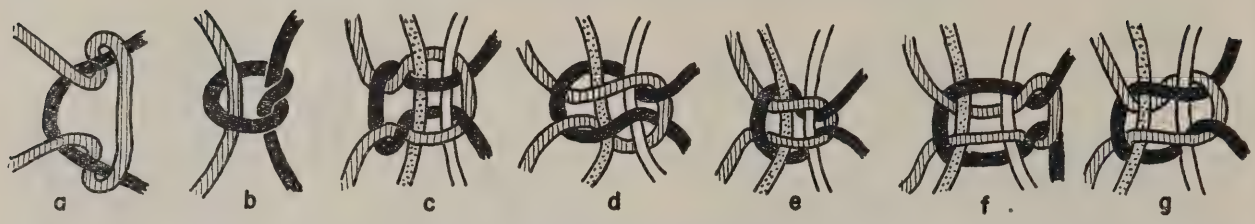


FIGURE 62.—Fringe knots. *a* and *b* are based on two strands, *c–g*, on four; all are viewed from the right side of the fabric. The distribution of these knots among our 22 *manteles* is given in table 13.

we have seen [27] are embroidered either in red or blue. There appear to be two major styles: one with angular design, depicted chiefly in cross-stitch and satin stitch (figs. 63–67); and the other, with floral, curvilinear motifs based on satin and outline stitch.

Of the embroidered skirts, only one appears to have survived in Tajín; we were allowed to photograph it (pl. 32, *a–d*), but the owner refused to sell, inasmuch as she planned to be buried in the garment. On the whole, its decorative aspect is quite European, as is that of the designs shown in figures 63 to 67. Craftsmanship is excellent. Satin stitch, cross-stitch and variants, as well as a couple of other stitches which we did not identify, are represented in the photographed skirt.

It is difficult to say to what extent items other than skirts were embroidered in former times. We have one *ruedo*, by no means ancient, but which evidently has seen considerable use. At each end, it has a simple cross-stitch design (pl. 33, *a*, *b*), which at one end, is flanked by a narrow border in different stitch (pl. 33, *b*).

Today, embroidery falls far below the standards of 40 and 50 years ago. About the best work done at present is darning over a drawnwork background. The threads of the area to be treated (as for example, the yoke of a blouse) are pulled, as in hemstitching, leaving small squares of solid material, surrounded on all sides by a determined number of loose warps and wefts. The edges of the area are whipped to prevent raveling, and the whole drawn-work zone likewise is caught with common sewing thread (working diagonally), to keep the small squares intact. The result is a sort of checkerboard, alternating solid and open squares. On this foundation, in darning stitch, colored threads, in various patterns, are added (pl. 33, *c*). Sometimes the darning runs with the warp, sometimes with the weft.

Darning over a drawnwork background seems to be used only for women's blouses—the square yoke at the neck, and the sleeves. When the material is of good quality, the colors nicely combined, and the sewing neat, the result is very attractive. Often, however, the muslin is shoddy, the combination of colors inharmonious, and the sewing untidy. The background lends itself to cross-stitch patterns, and sometimes folders with commercial designs are consulted. But many of the women are unable to count with sufficient skill to place the designs symmetrically.

A little cross-stitch is used today—for blouses, and occasionally as a very simple border on a muslin skirt. We watched a couple of girls, who had learned in the school a few years before, struggle with an excessively simple cross-stitch pattern. They worked without semblance either of skill or pleasure, using a commercial embroidery hoop but no thimble.

Satin stitch, outline stitch, wheat stitch, and blanket stitch (pl. 33, *d*, *e*) all are used to ornament blouse yokes and sleeves. Sometimes patterns are copied from commercial embroidery pamphlets; that shown in plate 28, *d*, was drawn by the brother of the woman who did the embroidery. Outline stitch, in various colors, may depict a bold floral design on a muslin skirt which, on

[27] Sra. Antonia Vargas de Campos, of Papantla, has a small but very attractive collection of old Totonac textiles, including several skirts. Most amiably, she permitted me to photograph extensively, and we had counted on the pictures for information concerning designs. However, upon returning to Mexico City, my purse, containing the rolls of undeveloped film, was stolen. Owing to this loss, first-hand comments concerning the Vargas collection must be confined to general impressions.

However, in 1935, Prof. Mateo Saldaña, of the Museo Nacional staff, was in Papantla and Tajín. At that time, he sketched the designs of several specimens in the Vargas collection and generously has permitted us to reproduce them (figs. 63–67).

Totonac skirts of several decades ago now are prized by mestizo girls in Papantla, and it is quite the vogue to be photographed in one, while clutching a few vanilla pods or holding a Tehuantepec painted gourd. Accordingly, from time to time, in Papantla, copies of old skirts are made, by and for non-Totonac women.

FIGURE 63.—Embroidery motifs. Individual designs. Sketched in 1935, by Prof. Mateo Saldaña, from "old" Totocan skirts in the collection of Sra. Antonia Vargas de Campos, of Papantla.

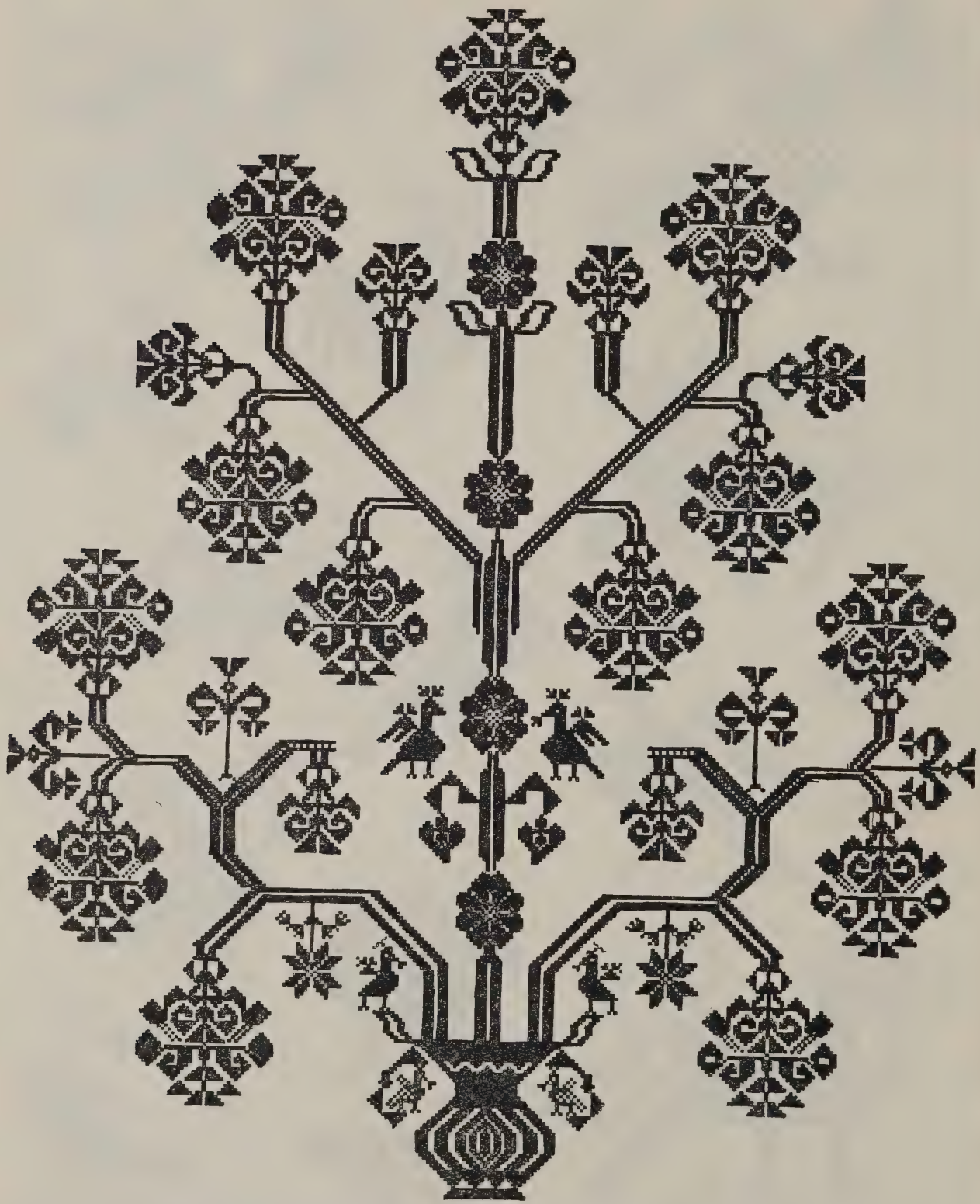

FIGURE 64.—Embroidery motif. Skirt pattern, same provenience as figure 63.

FIGURE 65.—Embroidery motif. Skirt pattern, same provenience as figure 63.

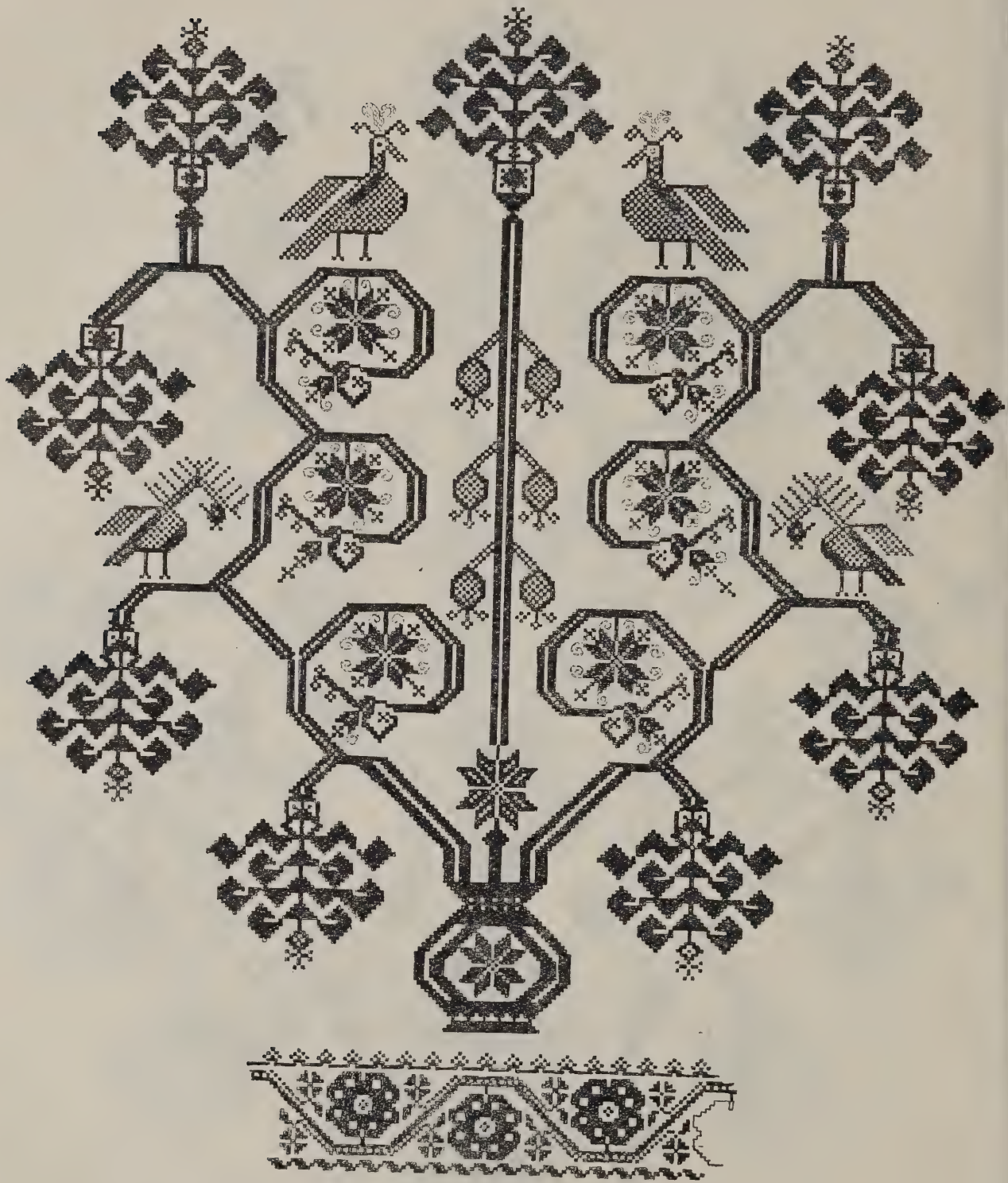

FIGURE 66.—Embroidery motif. Skirt pattern, same provenience as figure 63.

special occasions, is worn beneath the organdy overskirt.

A unique specimen, best considered embroidery, apparently simulates the handwoven *mantel*. The background is a flour sack, or some similar commercial product. On it, designs have been formed by looping *pabilo* thread on the right side, with a needle. The result is basically the same as our candlewick work (pl. 33, *f*).

FIGURE 67.—Embroidery motif. Skirt pattern, same provenience as figure 63.

Knitting is unknown in Tajín. Some women finish the neck of the blouse with a simple crocheted edge in shell stitch; and young men may apply a similar border to the "silk" handkerchief worn at the neck. More elaborate crochet is not attempted.

For good measure, it may be added that although the Totonac of the sixteenth century apparently made feather ornaments, such as head crests (Oviedo 3 : 259), there is no work in feathers today.

## DYES AND ADHESIVES

Today, native dyes are little used in Tajín, but several dye plants are recognized.

Four plants are known to the Totonac by individual names but are lumped under the Spanish term, *capulín;* the fruit of three of these (Nos. 21, 41, 85) is considered a source of black dye.

*Chuchurutana* (No. 46) produces a yellow dye, said to be fast color. One informant recommends using the fresh blossom; another says it should be dried. The flower is boiled, turning the water a brilliant yellow, following which the cloth is added. The plant is said to grow "anywhere," that is, it does not cluster about inhabited areas.

Fustic (*moral*, No. 324) provides another yellow dye. One woman boils small chips of the wood to extract the color; then adds the article to be dyed. A man recommends using scrapings from the heart of the wood instead of chips.

A green dye, not fast color, is obtained by boiling cloth with the leaves of *quitacalzón* (No. 29).

Blue is derived from *muitle*. The leaf or an entire spray is placed in water and cloth boiled with it until it turns blue. Shirts for infants sometimes are thus colored, to cure the child of crying. "If a baby cries all the time, it has *malviento* (a magical infirmity), but with a blue shirt, it stops crying."

Concerning *muitle*, there is a great deal of confusion. Several informants distinguish three kinds: red (*colorado*), purple (*morado*), and blue (*azul*), from which dyes of corresponding color are obtained. There is, moreover, casual mention of a black and a green *muitle;* the latter may be the same as the blue; and the former may refer to the purple. However, one woman claims that the purple *muitle* dyes blue: "One puts a spray in the water and the latter turns purple; but cloth which is boiled in it is blue."

We collected three specimens of *muitle* (No. 45), for which the same native name was given, and for all, the taxonomic determination was the same. In one case, four different informants inspected the plant; three considered it *muitle colorado* (or *rojo*), one, *morado*. One woman says frankly that she cannot tell the plants apart: "The leaf is the same; the flower might be different, but I am not sure; one knows the color of the dye only by boiling the plant."

In short, it would appear that there are at least two local plants, both known as *muitle*, and both bearing the same Totonac name. One results in a blue dye, the other in a red; it is quite likely that there is still a third, which produces a purple dye. *Muitle*, incidentally, is said to occur only in the vicinity of habitations.

Red *muitle* is used to dye pink or red. A child's

clothing may be colored with it as protection against an infirmity known locally as *alferecía* (not epilepsy, as dictionaries indicate). Red *muitle* also serves to color *coyol* palm nuts, sometimes sold on the streets of Papantla.

Strangely, the famous red dye plant, *Bixa orellana* L. (No. 78), is not used in Tajín as such, but is cultivated because of its medicinal properties. One informant, of experimental turn of mind, claims to have noticed that *sangregado* (No. 239) exudes a red sap, when cut. He reports having tried unsuccessfully to dye clothing with it (cf. Standley, p. 615), but found it satisfactory as a wood stain.

A color variously described as blue or green was obtained in former times from a wild shrub called limaštákan (No. 314); unfortunately, our specimen is not determinable. María Loreto remembers that years ago, in Talaxca, her mother boiled the leaves of this plant with clothing; or she boiled them and smeared the color on the exterior of home-made clay pots. The result, she says, was fast color, and varied between blue and light green. Precisely the same procedure is described, from hearsay, by a Tajín informant.

It is interesting to note that the Totonac name for the *zapote reventador* (No. 167) is translated as "thing for painting or writing." The informant who called this to our attention suggests that it should produce a "dye or ink." Today, the tree is regarded as of no utility, but the native term is suggestive.

One informant speaks longingly of *añil* (indigo), which was used as a dye in her youth. However, she claims that it was available in three colors—red, blue, and black. Upon questioning, it would appear that she calls any fast-color dye *añil;* the latter has no Totonac equivalent.

Several different adhesives are in current use in Tajín. A "cement" is made by mixing three ingredients: (a) lime; (b) *nejayote* (liquid drained from the maize, which has been steeped with lime, to produce *nixtamal*); and (c) *cachaza* (the froth which forms on the surface of boiling cane juice). This mixture is used to mend local pottery, particularly a piece which is damaged during firing; it does not serve for the glazed vessels imported from the highlands.

Any receptacle which is not to be used on the fire may be repaired with *atakawite*, the hard, black gum with which the native bee seals the apertures of its hive. The gum is softened against a coal and then is smeared over the break.

To stick papers together, the milky sap of three local plants commonly is employed: *chaca* (No. 228), *higuera* (No. 222), and *bejuco sarnoso* (No. 305). A small incision is made and the sap collected in a leaf. These local "pastes" are greatly in demand when altar decorations are being made, and at Christmas, when it is popular to make fancy lanterns of tissue paper, over a cane frame. The sap of the *chaca* also is used to apply bits of green leaves to the temple, to cure headache.

## METALLURGY

All along the Gulf coast, from Tabasco to San Juan de Ulúa, Cortés met Indians who were provided with a certain amount of worked gold, although, in no case, were the Spaniards overwhelmed with the value of the booty. As a matter of fact, Díaz del Castillo (1:85) states flatly that in "the province of the Río de Grijalva" and all its vicinity, there was no gold, except for "very few jewels" which the Indians had from their predecessors. He also notes (1:91) ruefully that in the general vicinity of Coatzalcoalcos, the Spaniards traded enthusiastically for copper axes, in the fond belief that they were of gold.

The Totonac may not have been lavishly supplied with gold in pre-Cortesian times, but it is said that certain coastal pueblos, including "Cempoala" and "Quiahuixtlan," gave gold (dust) in canes to the Tlaxcalans for their promise of aid against the Mexicans. Moreover there is the description of an extravagant gift sent the Mexican ruler, Axayacatl, from "Cempoala":

> They gave [the messengers] a fly chaser (*amosqueador*) of very rich feather[s], long and wide, for their king; it had in the center a sun of gold, surrounded by rich stonework of emeralds [*sic*], and above the head of the sun, like a hat, a diadem of amber which shone; and an armlet of gold, with much rich feather work; and a hair piece. The arch was of tortoise, and the hair braided with a gilded thong, with borders of small gold bells [Tezozomoc, p. 218].

At the time of the Spanish contact, the Totonac embassy sent from "Cempoala" to greet Cortés is said to have worn gold ornaments:

> And they bore large perforations in the lower lips, and in them some disks of stone delicately tinted blue,

and others with thin leaves of gold; and in the ears, very large openings, in them other disks with gold and stones . . . [Díaz del Castillo 1:160].

There is further mention of gold labrets, which seem to have been common, and of a gift, including "gold jewels" and textiles, which the chief of "Cempoala" had prepared for Cortés, but which Díaz del Castillo (1:171) considered of slight value. However, a contemporary source describes the gift from the chief of "Cempoala" as consisting of "a sun, made of gold, as large as a cart wheel and as thick as a fist, and a moon of silver, also as large and thick as the sun, as well as many containers of gold, a gold lobster (*cangrejo*), armlets, head pieces (*cascos*), disks, all of gold . . ." (Nueva noticia, p. 9). Oviedo (3:259) likewise describes the two great wheels, one of gold, the other of silver, and mentions "many jewels of gold and silver," which he claims actually to have seen later in Seville.

In short, it would appear that at the time of the Spanish Conquest, the Totonac had a certain amount of precious metals, although we have come upon no mention of copper. It is not possible to give the source of the metals, but it is evident that there are deposits of gold and silver, and to a lesser extent, of copper, on the borders of old Totonacapan (Ramírez, pp. 545, 546, 589, 592, 593). It may be assumed that the Totonac knew how to work metals, because the use of gold ornaments seems to have been too general to have depended upon trade. Nevertheless, as far as we know, metal artifacts have not appeared in archeological sites definitely identified as Totonac.

Today, in Tajín, there is no knowledge of metalworking. Gold ornaments are esteemed and generally form part of the gift given every bride, but they are made commercially, in Papantla; the Totonac do not wear silver jewelry.

## WEAPONS

Since Totonac-Spanish relations were essentially pacific, the early sources make little mention of weapons. However, in the course of the difficulties in which Escalante became embroiled, when left in charge of Villa Rica, the friendly pueblos of the highlands, presumably Totonac, were asked to come with "their arms, which were bows, arrows, lances, shields" [28] (Díaz del Castillo 1:344). For Zacatlán, there is a definite statement concerning weapons, which included "sharp sticks and bows and arrows"; warriors fought naked except for "long *mantas*" which covered the genitals (Relación de Zacatlán). The Totonac of Jonotla claimed that their war weapons were stones and *macanas* (the well-known Mexican obsidian-studded clubs) (Paso y Troncoso 5:128). Late sixteenth-century informants at Misantla claimed piously to be a peaceful people who manufactured cotton armor for sale to other pueblos (Relación de Misantla).

Papantla warriors fought naked, using bows and arrows (Relación de Papantla); and it would appear that the bow and arrow with stone point were used as late as the early nineteenth century, during the Olarte uprising (Olivo, p. 200; Nuñez y Domínguez, p. 54).

Today, the Tajín Totonac have no weapons of their own manufacture, hence a description of arms is included under technology solely as a matter of convenience. The machete probably is the most widely used weapon, as well as an implement of general utility. As a matter of fact, it is carried so constantly by every man that it might almost be considered a standard accessory to the wardrobe.

The machete is an oversized steel knife, affixed with metal rivets to a handle which, nowadays, apparently is of some synthetic material. There are various shapes, but the curved or hooked form, popular in stony areas, is not used locally. All machetes are purchased in hardware stores in Papantla. Without exception, they appear to have been made in the United States, most by Collins & Company, of Hartford. Two informants are unaware that they are using imported merchandise and gravely assure us that machetes sold in Papantla are produced in Monterrey, Mexico.

Different models are distinguished by trade numbers, of which Collins 35 and 460 seem to be

[28] Bows, arrows, and lances are reported for the Huasteca (Sahagún 3:131; Díaz del Castillo 1:90).

For neither Totonacapan nor the Huasteca have we found mention of the blowgun, although the latter is attributed, somewhat dubiously, to the Teotihuacán horizon (Linné, 1939, pp. 56–57); to the ancient Toltec (Veytia 1:194); to the Chichimecs (Ixtlilxochitl 1:75), whose sponsor claims the invention for them; to the Mexica (Gayangos, p. 101; Díaz del Castillo 1:382; Sahagún 2:298–299; Torquemada 1:292); and to the Maya (Ponce 2:409).

the most popular. Most favor the latter, but some claim that it is too long for a man of "medium" stature, who uses, in its stead, either a 22 or a 35. One states that his machete is an "eagle," No. 1724; we did not see the implement and assume that the eagle is simply the emblem borne by a standard product, probably not manufactured by Collins. Another, who identifies the make of his machete as a "hammer," actually uses a Collins 22, which has this insignia as part of the trademark, as does the Collins 460.

"There is no Totonac name for the machete," although some call it mašita (cf. p. 230). Informants distinguish four types by Spanish terms:

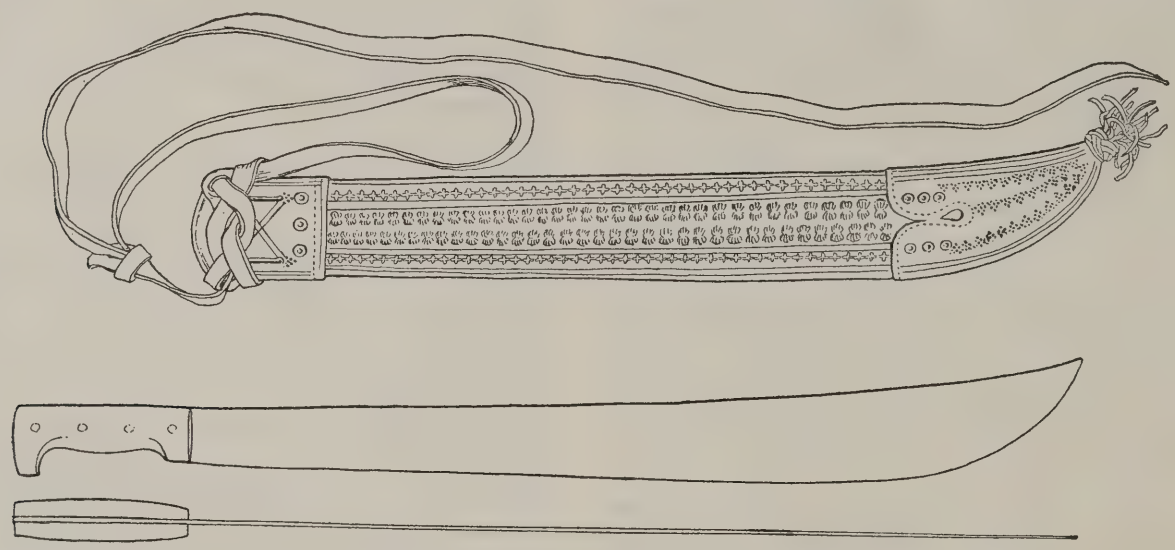

FIGURE 68.—Machete and sheath. Both purchased in Papantla store. Scale: Approximately ⅙ natural size.

*a. Huaparra.* The blade is broad, but thin. This type is preferred by some because it is "handsome" and "sounds pretty" as it cuts. For clearing along trails and for cleaning light growth from a field, preparatory to felling the trees, it is useful; but for cutting close to the ground, it is not satisfactory. This machete must not be used on bamboo, for the blade will nick; nor should hard or thick wood be cut with it, since the steel will bend. Accordingly, the *huaparra* is a luxury (*lujo*) for the average Totonac man.

*b. Huapote.* Because of its form, this machete bears the name of the fish, *huapote*. It is similar to the preceding, but shorter, about the same length as the *media cinta* mentioned below. The *huapote* is considered particularly handy for cutting sugarcane.

*c. Machete de cinta* (literally, strip or band, presumably because the blade is long and thin, with its sides roughly parallel) (fig. 68). This implement serves all the uses for which the *huaparra* is not adequate. It is about the same length as the latter (one which we purchased is close to 80 cm. long), but is much narrower and "thicker," that is, of heavier steel.

*d. Machete de media cinta* (so-called, because it resembles the preceding type, but is shorter). This serves the same purposes as the *machete de cinta* but is approximately 8 cm. shorter.

We have not been able to accord the above classification very well with commercial types, but Collins 460 definitely is the *machete de cinta;* 22 and 35, presumably the *media cinta.* Of the *huaparra* and *huapote*, we are uncertain. These evidently were most popular a good many years ago; although it is said that some still are used currently, we observed none and know the instrument only from description. One informant thinks that both still are obtainable in Papantla, but we located none.

The machete is purchased already tempered, but without cutting edge. The latter is applied by working the blade with a file or with a special stone (called *mollejón*), purchased in Papantla and thought to be brought from Huauchinango. Most prefer the stone, since a file wears the steel rapidly. However, when a man sallies forth to clear a field, he generally carries a file, in case the blade needs retouching in the course of the day. When fields are being prepared for planting, an almost daily chore is that of sharpening the machete before one leaves the house.

In ordinary times, a machete costs about $10.00

pesos, although during the war years, the price soared to $25.00 pesos. The leather sheath (fig. 68) also is purchased in Papantla, together with a thick thong, about 1.5 cm. wide, by which the sheath is attached to the waist. These accessories cost $5.00 and $1.00 pesos respectively. The leather cover is not made in Papantla and we are uncertain of its provenience; it is said to come from Cuernavaca (*sic*), but a saddler in Villa Juárez assured us that he produces machete covers for the Papantla trade.

A thong passes through slits near the top of the sheath, to which it is affixed in a variety of ways (fig. 69). Some put a commercial metal buckle on one end of the leather strip and fasten it thus about the waist; others simply tie the thongs. Usually the machete hangs at the left side of the waist, ready to be grasped with the right hand. We know several left-handed men in Tajín; they carry the knife on the opposite side.

When a boy begins to assist his father in the fields, he learns to wield a short machete. Accordingly, training starts early, and all local men are highly proficient in handling the knife; some, at least, are close to ambidextrous. About the house, the machete has the combined functions of a knife and hatchet, and a woman sometimes uses it; women who assist in the fields often handle the machete with considerable skill.

In clearing a field and in building a house, the machete is the principal tool used, except when large trees must be felled. Moreover, it functions with appalling efficiency as a weapon, and a fair proportion of the local homicides results from machete wounds.[29] However, more and more, firearms are used in such cases, for one can shoot from a certain distance and thus escape more readily.

Under no circumstances, may a woman step over the machete. Obviously, it continues to cut; but "it may bounce from the hand" and wound the operator.

Firearms are now in general use. Since weapons are not included in our census, we have no way of knowing how plentiful they are, but among our acquaintances, a good many seem to be supplied. Chief reliance is on an ancient type of muzzle-loading fowling piece, double-barreled, and with two triggers. Powder is added first and

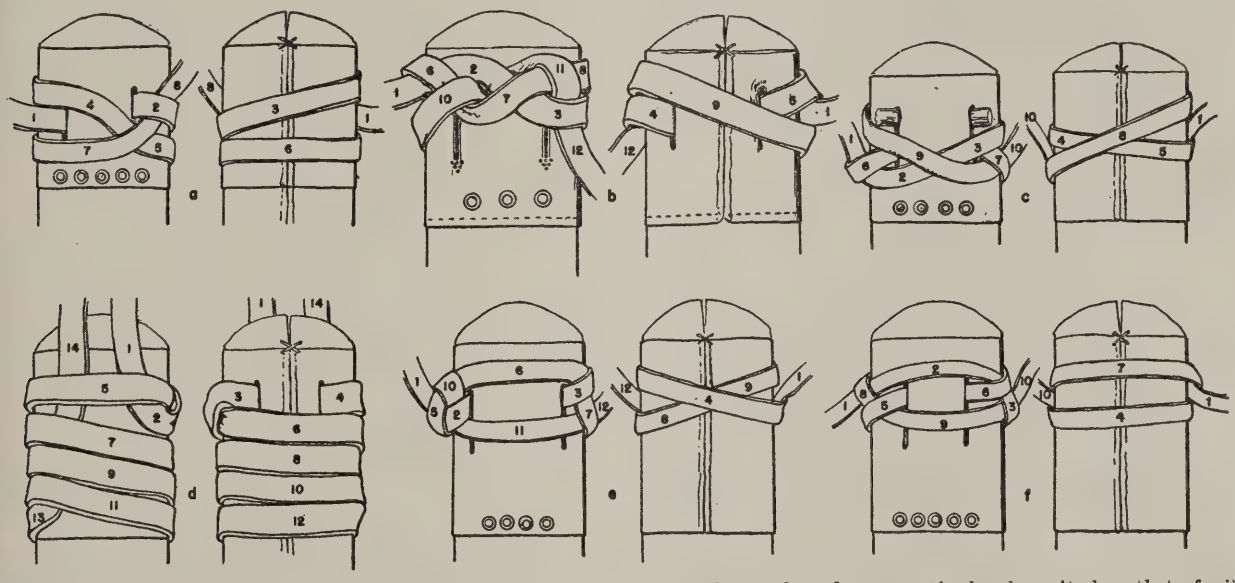

FIGURE 69.—Ways of affixing thong to machete sheath. The thong is numbered consecutively along its length to facilitate following the course of the wrapping. For each specimen, obverse and reverse are shown. With one exception, the former has a pair of parallel slits; the latter, a central seam. However, in *d*, both seam and slits are on the reverse side. In *c*, a twig thrust through the slashes, presumably keeps the thong from riding upward.

[29] In local thought, the machete is firmly identified as a homicidal weapon. One informant was recounting folktales and included, for good measure, his version of certain Biblical events. He described the death of Christ as follows: *"Luego mataron a Nuestro Señor; lo hicieron cachitos y lo sepultaron."*

is tapped lightly with a rod. Next comes a homemade "cork" (*tapón*), consisting of a ball of raveled rope (*mecate*), which is pounded tightly into place. Next, shot is added, followed by another "cork."

It is said that the arm will take two sizes of shot, dependent upon the quarry. The latter includes both man and beast, and we know of at least two instances in which the fowling piece was used for homicide. Powder, shot, and the cap (*casquillo*) against which the trigger hits, are stored in the hollowed, dried fruit of the *zacual cimarrón* (No. 132).

There are several rifles (cartridge and arm are both called *cartucho*) in the community, and at least two men, probably more, have pistols. Care is taken that no woman, irrespective of her social or physiological condition, step over a firearm. Should such a calamity occur, the aim of the weapon is ruined irrevocably.

## APPENDIX A

# LANGUAGE AND POPULATION

## SIXTEENTH CENTURY

The sixteenth century extent of Totonacapan and its population have been considered in the main text (pp. 3–12). In table 14 (pp. 251–260) are presented the basic data on which that treatment is based.

In formulating table 14, we have used two more or less distinct, but in part overlapping, sets of sources, which are discussed separately in the following paragraphs.

### LINGUISTIC SOURCES

We have relied chiefly on five linguistic sources, three of which are ecclesiastical:

1. Two documents, *Doctrinas de indios*, written about 1569 and 1571, respectively. Both are cited as Doctrinas, and page reference indicates clearly which document is involved; both have been published by Paso y Troncoso.

2. *Relación del distrito y pueblos del obispado de Tlaxcala;* written about 1570; published in the Epistolario and so cited.

3. Mota y Escobar, *Memoriales del obispo de Tlaxcala*, covering the years between 1608 and 1624; cited by author. Observations subsequent to 1623 contain no reference to native speech in the area which interests us.

4. Various of the *relaciones geográficas*, those utilized dating between 1579 and 1581. Unpublished *relaciones* are cited by title; published ones, under the name of the editor, Paso y Troncoso, except for that of Huauchinango, published by Toussaint, and cited by his name.

5. Various documents in the Archivo General de la Nación; cited as AGN, followed by a number which refers to our terminal bibliography. Unfortunately, the greater part of the data found in the Archivo applies to the seventeenth and eighteenth centuries. Accordingly, the information does not appear in the present table or in map 1, but is cited occasionally in the text.

Additional minor sources include Gómara, Díaz del Castillo, Mendieta, Ixtlilxochitl, Ponce, and Torquemada, all cited by author.

Differences and contradictions between the various sources are discussed in detail in the notes below. We have considered most reliable the sources listed above under numbers 1, 3, and 4. When they are not in agreement, we have attempted to choose between them, with the reasons for the selection indicated in the notes.

As special cases, under Nautla (No. 27), Cuautenco (No. 44), and Totutla (No. 65) are three references which indicate language prior to 1519. Various records subsequent to 1623 are cited in the text but have not been included either in table 14 or in map 1.

### POPULATION SOURCES

The population sources are chiefly nine, as follows:

1. *Suma de visitas*, which apparently dates from ca. 1550; published by Paso y Troncoso; cited as: Suma.

2. *Relación de los pueblos de indios de Nueva España que están encomendados en personas particulares;* written in 1560; published in the Epistolario, and so cited.

3. *Lista de los pueblos de indios . . . encomendados en personas particulares;* written between 1565 and 1570; published by García Pimentel, 1904, and cited by editor's name.

4. *Relación del distrito y pueblos del obispado de Tlaxcala;* written about 1570; published in the Epistolario and so cited.

5. Two documents, *Doctrinas de indios*, written about 1569 and 1571, respectively. Both cited as Doctrinas, with page reference indicating which document is involved; published by Paso y Troncoso.

6. López de Velasco, *Geografía y descripción universal de las Indias;* written in 1571; cited by name of author.

7. Various of the *relaciones geográficas*. Unpublished ones are cited by title; published *relaciones*, under the name of the editor, Paso y Troncoso.

8. *Información recibida en la Real Audiencia de México;* dated 1597; published in the Epistolario and so cited.

9. Mota y Escobar, *Memoriales del Obispo de Tlaxcala*, covering the years 1608 to 1624; cited by author. Observations subsequent to 1610 do not contain population data for the zone under consideration.

Additional minor sources include: Las Casas and Aguilar, both cited by author; and the *Sen-*

*tencias que dieron el visitador Diego Ramírez y su acompañado*, the latter published in the Epistolario and so cited.

The validity of available sources on ancient population has been much discussed of late. Kubler (p. 612) believes that the figures may have been exaggerated by the *encomenderos*, in complicity with Crown officials, in order to boost tribute. Native informants, on the other hand, probably gave low figures in the hope of reducing taxes.

In fact, one source (Martín Cortés, pl. 448) claims that the native chiefs had great numbers of the population go into hiding. Thereupon, they requested a new tax levy, claiming that, owing to reduction in numbers, they could not meet current obligations. He maintains that an inspector might find only a third of the population, even though no deaths had occurred. However, it seems by no means unlikely that the *encomenderos* themselves reduced the number, in order to simulate poverty and thus obtain new grants from the Crown. Cook and Simpson (p. 1) maintain that a careful examination of the sixteenth century documents is highly convincing and that their essential agreement cannot be fortuitous.

We believe, however, that Kubler's comments (p. 613) concerning the difficulty of an accurate census in the sixteenth century are well taken—not only because of technical difficulties, but also because of the displacement of native population. We know, in fact, that a large number of natives changed residence frequently, in order to take advantage of the consequent exemption of tribute (Doctrinas, p. 220). Elsewhere (pp. 34–38) will be found a discussion of the Totonac dispersal which resulted from the systems of *encomiendas* and *haciendas*.

Obviously, on the one hand, not all of the sixteenth-century native population could have been taken into consideration, and the actual population between 1550 and 1610 must have been appreciably greater than that which is given in the sources, even if it be assumed that the latter cite correct figures for the areas under Spanish control. Probably the major difficulty lies not in the estimates which appear in the various sources—among which there is suggestive agreement—but in the fact that the old documents do not begin to cover the entire territory.

On the other hand, there is a certain danger of duplication. Sometimes it is difficult to accommodate Totonac pueblos to Spanish political and ecclesiastical boundaries. Accordingly, it is by no means impossible that a settlement, not mentioned by name, but included as the subject of a more important pueblo, may be counted by us a second time if, in another source, it appears under its own name. We feel, however, that errors resulting from such duplication probably are slight.

For 16 pueblos, we have cited estimates of population prior to 1550. These come principally from the *relaciones geográficas*, but statements from Las Casas and Aguilar also are included. On the whole, the estimates appear reasonable, and only for "Cempoala," Colipa, Jalapa, and Papantla are they so large that exaggeration may be suspected. A discussion of the 1519 population will be found in the text (pp. 11–12).

## MODERN TIMES

Modern Totonacapan may be defined as the area where the Totonac language still is current. In order to establish its boundaries, we have inspected the original sheets of the 1940 census; the published reports are not enlightening, since they class bilinguals as Spanish-speaking.

We started with municipal units known to contain a Totonac ingredient, and from them we worked outward radially, until it was evident that we were well beyond the range of Totonac speech. Table 15 is the result of our endeavors. Population totals given therein are from the published 1940 census; occurrences of native speech are from our count of the records in the census archives. The grouping of all persons exclusively of non-indigenous speech and of all children less than 5 years of age is explained in the legend to may 2. The latter is essentially a graphic presentation of the data of table 15. On the map, occurrences of less than 3 percent of native speech have been ignored; however, the table gives the incidence of these insignificant elements.

In map 3, the extent of sixteenth-century and modern Totonacapan is compared, and the shrinkage which has taken place in the course of the years is treated in the main text (pp. 12–14).

TABLE 14.—*Language and population in sixteenth-century Totonacapan* [1]

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| Key No., map 1 | Pueblo | Ownership | Tributaries | Population | Date | Calculated population: In 1565, after Cook and Simpson | Calculated population: Our average, ca. 1550–1610 | Language | Sources |
| | VERACRUZ | | | | | | | | |
| 1 | Acatlán | | 500 | [21] [2,000] / [22] [308] | Ca. 1519 / Ca. 1550 / Ca. 1565 | | | | Paso y Troncoso 5 : 113. / CS(A), p. 118. / CS, p. 166.[67] |
| | | Martín de Mafra | 100 | 400 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 242. |
| | | do | 100 | 400 | Ca. 1570 | | | T | Epistolario 14 : 81. |
| | | do | 100 | 400 | 1571 | | | | López de Velasco, p. 220. |
| | | | | | 1572 | | | T | AGN, No. 1. |
| | | Martín de Mafia [sic] | 100 | 400 | 1580 | | | | Paso y Troncoso 5 : 113. |
| | | Martín de Mafra | 85 | 340 | 1597 | | | | Epistolario 13:35. |
| | | | | | | 400* | 388 | | *CS, pp. 118–119. |
| 2 | Actopan | | | [22] [253] | Ca. 1550 | | | | CS(A), p. 118. |
| | | Crown | 85 | 340 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 241. |
| | | do | 110 | 440 | Ca. 1570 | | | T | Epistolario 14 : 81. |
| | | | 52 | 208 | Ca. 1570 | | | | CS(E), p. 118. |
| | | | 85 | 340 | 1571 | | | | López de Velasco, p. 219. |
| | | | | | | 329* | 332 | | *CS, pp. 118–119. |
| 3 | Almolonga | | 1,500 | [21] [6,000] / [22] [63] | Ca. 1519 / Ca. 1550 | | | | Paso y Troncoso 5 : 118. / CS(A), p. 118. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 168.[67] |
| | | [Gonzalo Rodríguez de] Villafuerte | 21 | 84 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 242. |
| | | Gonzalo Rodríguez de Villafuerte | 20 | 80 | Ca. 1570 | | | T | Epistolario 14 : 82. |
| | | | 21 | 84 | 1571 | | | | López de Velasco, p. 220. |
| | | Crown | 20 | 80 | 1580 | | | [60] T–M | Paso y Troncoso 5 : 118–119. |
| | | | | | | 82* | 82 | | *CS, pp. 118–119. |
| 4 | Atzalan [1a] | Andrés Dorantes [15] | 1,300 | 5,200 | Ca. 1550 | | | | Suma, No. 351. |
| | | María de la Torre | 3,900 | [23] [15,600] | 1560 | | | | Epistolario, 9 : 18. |
| | | Andrés Dorantes | | | Ca. 1565 | | | | CS, p. 188.[67] |
| | | María de la Torre | 1,300 | 5,200 | 1565–1570 | | | | García Pimentel, 1904, p. 169. |
| | | | 1,700 | 6,800 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 264. |
| | | Andrés Dorantes | 1,608 | 6,432 | Ca. 1570 | | | [60] T–M | Epistolario 14 : 80. |
| | | | 1,700 | 6,800 | 1571 | | | | López de Velasco, pp. 221–222. |
| | | Antonia de Benavides | 963 | 3,852 | 1597 | | | | Epistolario 13:35. |
| | | | | | | 5,200* | 5,714 | | *CS, pp. 68–69. |
| | Atzalan with Jalacingo and Altotonga.[2] | Crown | 800 | [24] [3,200] | 1609 | | | [61] T | Mota y Escobar, p. 198. |
| | | | | | | | [44] [3,200] | | |
| 5 | "Cempoala" | | | | 1519 | | | T | Díaz del Castillo 1 : 160, 171. |
| | | | | | 1519 | | | T | Torquemada 1 : 278. |
| | | | 20,000–30,000 | [21] [80,000–120,000] | Ca. 1519 | | | | Las Casas, p. 129. |
| | | | 20,000 | [21] [80,000] | Ca. 1519 | | | | Aguilar, p. 39. |
| | | | 30,000 | [21] [120,000] | Ca. 1519 | | | | Paso y Troncoso 5 : 201. |
| | | | 20,000 | [21] [80,000] | Ca. 1519 | | | | Relación de Veracruz. |
| | | | 20 | 80 | 1529 | | | | Epistolario 1:141. |
| | | | | [22] [36] | Ca. 1550 | | | | CS (A), p. 134. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 217.[67] |
| | | do | 12 | 48 | Ca. 1570 | | | | Epistolario 14 : 82. |
| | | do | 20 | 80 | 1571 | | | | Paso y Troncoso 5 : 193. |
| | | | 30 | 120 | 1580 | | | | Relación de Veracruz. |
| | | Crown | 8 | 32 | 1609 | | | T | Mota y Escobar, p. 218. |
| | | | | | | 48* | 72 | | *CS, pp. 134–135. |
| 6 | Chapultepec | | 2,000 | [21] [8,000] / [22] [404] | Ca. 1519 / Ca. 1550 | | | | Paso y Troncoso 5 : 111. / CS (A), p. 120. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 178.[67] |
| | | do | 140 | 560 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 240. |
| | | do | 140 | 560 | Ca. 1570 | | | T | Epistolario 14 : 81. |
| | | | 114 | 456 | Ca. 1570 | | | | CS (E), p. 120. |
| | | | 140 | 560 | 1571 | | | | López de Velasco, p. 219. |
| | | | | | 1572 | | | [60] T–M | AGN, No. 1. |
| | | Crown | 150 | 600 | 1580 | | | [60] T–M | Paso y Troncoso 5 : 111–112. |
| | | | | | | 525* | 547 | | *CS, pp. 120–121. |

See footnotes at end of table.

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TABLE 14.—*Language and population in sixteenth-century Totonacapan*—Continued

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| Key No., map 1 | Pueblo | Ownership | Tributaries | Population | Date | Calculated population: In 1565, after Cook and Simpson | Calculated population: Our average, ca. 1550–1610 | Language | Sources |
| | VERACRUZ—Continued | | | | | | | | |
| 7 | Chichilintla | Diego de Porras [16] | 696 | 2,784 | Ca. 1550 | | | | Suma, No. 116. |
| | | Juan de Cuenca | 1,800 | 7,200 | 1560 | | | | Epistolario 9 : 6. |
| | | do | | | Ca. 1565 | | | | CS, p. 178.[67] |
| | | do | 1,500 | 6,000 | 1565–70 | | | | García Pimentel, 1904, p. 156. |
| | | do | 1,000 | 4,000 | Ca. 1570 | | | [62] T–M | Epistolario 14 : 77. |
| | | | | | 1581 | | | T | Relación de Jojupango. |
| | | | 1,200 | 4,800 | 1579–84 | | | | CS (O), pp. 120–121. |
| | | María de Porras | 925 | [25] [3, 700] | 1597 | | | | Epistolario 13 : 35. |
| 8 | Chiconquiaco [2a] | Juan Valiente | 35 | [26] [140] | 1565–70 | 5,000* | 4, 957 | | *CS, pp. 120–121. |
| | | do | 50 | 200 | 1580 | | | | García Pimentel, 1904, p. 171. |
| | | | | | | | | [60] T–M | Paso y Troncoso 5 : 114–115. |
| | Chiconquiaco with Miahuatlán [2a] | do | 150 | [27] [600] | Ca. 1569–71 | | 200 | [60] T–M | Doctrinas, p. 242. |
| | | do | 150 | [27] [600] | Ca. 1570 | | | T | Epistolario 14 : 81–82. |
| 9 | Chicuasén [3] | | | | | | [45] [600] | | |
| | | | | [22] [142] | Ca. 1550 | | | | CS (A), p. 132. |
| | | | 45 | 180 | 1560 | | | | CS (B), p. 132. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 178.[67] |
| | | | 45 | 180 | 1565–70 | | | | CS (L), p. 132. |
| | | Crown | 45 | 180 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 241. |
| | | | 50 | 200 | Ca. 1570 | | | T | Epistolario 14 : 81. |
| | | | 45 | 180 | Ca. 1570 | | | | CS (E), p. 132. |
| | | | 45 | 180 | 1571 | | | | CS (C), p. 132. |
| | | | 45 | 180 | 1571 | | | | López de Velasco, p. 219. |
| 10 | Chiltoyac [4] | Crown | 40 | [28] [160] | 1580 | 185* | 183 | | *CS, pp. 132–133. |
| | | | | | | | | [60] T–M | Paso y Troncoso 5 : 119. |
| | Chiltoyac with "Pangololutla" and "Maçaltajola." [4a] | Gonzalo Rodríguez de Villafuerte | 170 | 680 | 1560 | | [46] [160] | | Epistolario 9 : 22. |
| | | do | | | Ca. 1565 | | | | CS, p. 179.[67] |
| | | do | | | 1565–70 | | | | García Pimentel, 1904, p. 170. |
| 11 | Chumatlán [2a] | Ana María | 150 | 600 | 1610 | | 680 | T | Mota y Escobar, pp. 231–232. |
| 12 | "Ciguacoatlan" [5] | | | | | | 600 | | |
| | | | 1,000 | [21] [4, 000] | Ca. 1519 | | | | Paso y Troncoso 5:116. |
| | | | | [22] [154] | Ca. 1550 | | | | CS (A), p. 134. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 217.[67] |
| | | | 50 | 200 | Ca. 1569–71 | | | T | Doctrinas, pp. 204–205. |
| | | | 50 | 200 | 1571 | | | | López de Velasco, p. 216. |
| | | Crown | 25 | 100 | 1580 | | | [60] T–M | Paso y Troncoso 5:116–117. |
| 13 | Coacoatzintla | | | | | *200 | 167 | | *CS, pp. 134–135. |
| | | | 800 | [21] [3, 200] | Ca. 1519 | | | | Paso y Troncoso 5:110. |
| | | | | [22] [444] | Ca. 1550 | | | | CS (A), p. 120. |
| | | Son of Lucas Gallego | 100 | 400 | 1560 | | | | Epistolario 9 : 15. |
| | | Domingo Gallego [17] | | | Ca. 1565 | | | | CS, p. 173.[67] |
| | | Son of Lucas Gallego | 60 | 240 | 1565–70 | | | | García Pimentel, 1904, pp. 165–166. |
| | | Miguel Arias | 163 | 652 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 242. |
| | | do | 200 | 800 | Ca. 1570 | | | T | Epistolario 14:81. |
| | | | 173 | 692 | 1571 | | | | López de Velasco, p. 219. |
| | | Domingo Gallego | 120 | 480 | 1580 | | | | Paso y Troncoso 5:109–110. |
| | | Domingo Gallegos [sic] | 67 | 268 | Ca. 1597 | | | | Epistolario 13:40. |
| 14 | Coahuitlán [2a] | Ana María | 80 | 320 | 1610 | *577 | 505 | | *CS, pp. 120–121. |
| | | | | | | | | T | Mota y Escobar, pp. 230–231. |
| 15 | Colipa [6] | | | | | | 320 | | |
| | | | 6,000 | [21] [24, 000] | Ca. 1519 | | | | Paso y Troncoso 5:115. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 174.[67] |
| | | | 120 | 480 | Ca. 1569–71 | | | T | Doctrinas, pp. 204–205. |
| | | | 130 | 520 | 1571 | | | | López de Velasco, p. 216. |
| | | Crown | 100 | 400 | 1580 | | | T | Paso y Troncoso 5:115–116. |
| | | | | | | | 467 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 16 | "Huehuetepec" with "Piloya" [2a] | | 10 | 40 | Ca. 1569–71 | | | T | Doctrinas, pp. 204–205. |
| | | | 10 | 40 | 1571 | | | | López de Velasco, p. 216. |
| | | | | | | | 40 | | |
| 17 | Jalacingo | | | [23] [3,800] | Ca. 1550 | | | | CS (A), p. 120. |
| | | | 320 | 1,280 | 1560 | | | | CS (B), p. 120. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 185.[67] |
| | | do | 800 | 3,200 | Ca. 1570 | | | [63] T–M | Epistolario 14:79–80. |
| | | | 1,403 | 5,612 | Ca. 1570 | | | | CS (E), p. 120. |
| | | | 1,502 | 6,008 | 1571 | | | | CS (C), p. 120. |
| | | Crown | | | 1609 | | | M | Mota y Escobar, p. 198. |
| | | | | | | 4,940* | 4,025 | | *CS, pp. 120–121. |
| | Jalacingo with Altotonga and Tlapacoyan.[2] | Crown | 800 | [3] [3,200] | Ca. 1569–1571 | | | M | Doctrinas, p. 248. |
| | | | | | | | [47] [3,200] | | |
| 18 | Jalapa | | 30,000 | [21] [120,000] | Ca. 1519 | | | | Paso y Troncoso 5:100. |
| | | | | [22] [1,966] | Ca. 1550 | | | | CS (A), p. 122. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 185.[67] |
| | | | 1,295 | 5,180 | 1571 | | | | López de Velasco, p. 223. |
| | | | | | 1572 | | | [64] T–M | AGN, No. 1. |
| | | Crown | 639 | 2,556 | 1580 | | | M | Paso y Troncoso 5:99–101. |
| | | | | | 1585 | | | [64] T–M | Ponce 1:187. |
| | | | | | | *2,556 | 3,868 | | *CS, pp. 122–123. |
| 19 | Jilotepec [6a] | | 1,000 | [21] [4,000] | Ca. 1519 | | | | Paso y Troncoso 5 : 106. |
| | | | | [22] [1,148] | Ca. 1550 | | | | CS (A), p. 120. |
| | | Crown | 360 | 1,440 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 240. |
| | | do | 350 | 1,400 | Ca. 1570 | | | T | Epistolario 14: 80–81. |
| | | | 360 | 1,440 | 1571 | | | | López de Velasco, p. 219. |
| | | | | | 1572 | | | T | AGN, No. 1. |
| | | Crown | 200 | 800 | 1580 | | | [60] T–M | Paso y Troncoso 5 : 106. |
| | | do | 341 | 1,364 | 1609 | | | [T] | Mota y Escobar, p. 201. |
| | | | | | | *1,493 | 1,289 | | *CS, pp. 120–121. |
| 20 | "Maçaltajola" (see Chiltoyac, No. 10). | | | | | | | | |
| 21 | Maxtlatlán | | | [23] [108] | Ca. 1550 | | | | CS (A), p. 132. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 188.[67] |
| | | do | 35 | 140 | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 241. |
| | | | 35 | 140 | 1571 | | | | López de Velasco, p. 219. |
| | | Crown | 15 | 60 | 1580 | | | | Paso y Troncoso 5 : 119. |
| | | | | | | *140 | 113 | | *CS, pp. 132–133. |
| 22 | Mecatlán [7] | | 900 | 3,600 | 1571 | | | | López de Velasco, p. 218. |
| | | Ana María | 240 | 960 | 1610 | | | T | Mota y Escobar, p. 231. |
| | | | | | | | 2,280 | | |
| | Mecatlán with Chichilintla [8] | Juan de Cuenca | 1,200 | [30] [4,800] | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 232. |
| | | | | | | | [48] [4,800] | | |
| 23 | Miahuatlán (see Chiconquiaco, No. 8). | | 2,000 | [21] [8,000] | Ca. 1519 | | | | Paso y Troncoso 5 : 114. |
| | | | | [22] [461] | Ca. 1550 | | | | CS (A), p. 122. |
| | | Juan | 50 | 200 | Ca. 1560 | | | | Epistolario 9:32. |
| | | Juan Valiente | | | Ca. 1565 | | | | CS, p. 189.[67] |
| | | do | | | Ca. 1570 | | | T | Epistolario 14: 81–82. |
| | | | 150 | 600 | 1571 | | | | López de Velasco, p. 220. |
| | | Juan Valiente | 50 | 200 | 1580 | | | [60] T–M | Paso y Troncoso 5: 114. |
| | | | | | | *600 | 333 | | *CS, pp. 122–123. |
| 24 | Misantla | | | [22] [2,476] | Ca. 1550 | | | | CS (A), p. 122. |
| | | Crown | 300 | 1,200 | 1553 | | | | Epistolario 8 : 156. |
| | | do | | | Ca. 1565 | | | | CS, p. 189.[67] |
| | | do | 800 | 3,200 | Ca. 1565 | | | | Relación de Misantla. |
| | | | 500 | 2,000 | Ca. 1569–71 | | | T | Doctrinas, pp. 204–205. |
| | | Crown | 600 | 2,400 | Ca. 1570 | | | [60] T–M | Epistolario 14 : 80. |
| | | | 610 | 2,440 | Ca. 1570 | | | | CS (E), p. 122. |
| | | | 500 | 2,000 | 1571 | | | | López de Velasco, p. 216. |
| | | | | | 1572 | | | M | AGN, No. 1. |
| | | Crown | 378 | 1,512 | 1579 | | | T | Relación de Misantla. |
| | | | 585 | 2,340 | 1579–84 | | | | CS (O), pp. 122–123. |
| | | Crown | 455 | 1,820 | 1610 | | | T | Mota y Escobar, p. 219. |
| | | | | | | *3,220 | 2,101 | | *CS, pp. 122–123. |
| 25 | "Nanacatlan" [2a] | | 25 | 100 | Ca. 1569–71 | | | T | Doctrinas, pp. 204–205. |
| | | | 25 | 100 | 1571 | | | | López de Velasco, p. 216. |
| | | | | | | | 100 | | |
| 26 | Naolinco [2] | | 1,500 | [21] [6,000] | Ca. 1519 | | | | Paso y Troncoso 5:112. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 190.[67] |
| | | do | 200 | 800 | Ca. 1569–71 | | | [60] T–M | Doctrinas, pp. 240–241. |
| | | do | 230 | 920 | Ca. 1570 | | | T | Epistolario 14:81. |
| | | | 200 | 800 | 1571 | | | | López de Velasco, p. 219. |
| | | Crown | 150 | 600 | 1580 | | | [60] T–M | Paso y Troncoso 5:112–113. |
| | | do | 347 | 1,388 | 1609 | | | [60] T–M | Mota y Escobar, pp. 201–202. |
| | | | | | | | 902 | | |
| | Naolinco with "Almería," Colipa, "Malinalcingo," Tlapacoyan, and Tamomolo. | | | | | | | | CS, pp. 122–123. |
| | | | | | | 860* | | | |

See footnotes at end of table.

TABLE 14.—*Language and population in sixteenth-century Totonacapan*—Continued

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| Key No., map 1 | Pueblo | Ownership | Tributaries | Population | Date | Calculated population: In 1565, after Cook and Simpson | Calculated population: Our average, ca. 1550–1610 | Language | Sources |
| | VERACRUZ—Continued | | | | | | | | |
| 27 | Nautla [6] | | | | 1486 | | | T | Ixtlilxochitl 2: 271. |
| 28 | "Pangololutla" (see Chiltoyac, No. 10). | | | | | | | | |
| 29 | Papantla [2] | | 15,000 | [21] [60,000] | Ca. 1519 | | | | Relación de Papantla. |
| | | Andrés de Tapia | 421 | 1,684 | Ca. 1550 | | | | Suma, No. 449. |
| | | do | | | Ca. 1565 | | | | CS, p. 193.[67] |
| | | Cristóbal de Tapia | 300 | 1,200 | 1581 | | | T | Relación de Papantla. |
| | | *"Encomendero"* | 300 | 1,200 | 1610 | | | [60] T-M | Mota y Escobar, pp. 232–233. |
| | Papantla with "Tuzapan" | | | | | | 1,361 | | |
| | | Andrés de Tapia | 1,720 | [21] [6,880] | 1560 | | | | Epistolario 9:22. |
| | | Cristóbal de Tapia | 150 | [21] [600] | Ca. 1570 | | | M | Epistolario 14:77. |
| | Papantla with "Tuzapan" and Tuxpan.[2] | Cristóbal de Tapia | 600 | [22] [2,400] | 1565–70 | 1,200* | [49] [3,740] | | *CS, pp. 122–123. García Pimentel, 1904, pp. 172–173. |
| | Papantla with Tancoco, Tihuatlán, "Tuzapan," and Jalpan.[2] | Cristóbal de Tapia | 550 | [33] [2,200] | Ca. 1569–71 | | [50] [2,400] | [65] T-M-H-O-Tep. | Doctrinas, p. 220. |
| 30 | "Piloya" (see "Huehuetepec," No. 16). | | | | | | [51] [2,200] | | |
| 31 | Potingo [2a] | | 10 | 40 | Ca 1569–71 | | | T | Doctrinas, pp. 204–205. |
| | | | 10 | 40 | 1571 | | | | López de Velasco, p. 216. |
| 32 | "Quiahuixtlan" [2a] | | | | | | 40 | | |
| | | | | | Ca. 1519 | | | T | Gómara 1:127. |
| | | | | | Ca. 1519 | | | T | Torquemada 1:278. |
| 33 | Tepetlán | | 1,000 | [21] [4,000] | Ca. 1519 | | | | Paso y Troncoso 5: 117. |
| | | | | [22] [328] | Ca. 1550 | | | | CS(A), p. 122. |
| | | Crown | 103 | 412 | Ca. 1569–71 | | | [60] T-M | Doctrinas, p. 241. |
| | | do | 110 | 440 | Ca. 1570 | | | T | Epistolario 14: 81. |
| | | | 103 | 412 | 1571 | | | | López de Velasco, p. 219. |
| | | Crown | 60 | 240 | 1580 | | | T | Paso y Troncoso 5: 117–118. |
| 34 | Tlacolulan | | 2,000 | [21] [8,000] | Ca. 1519 | 426* | 376 | | *CS, pp. 122–123. Paso y Troncoso 5: 108. |
| | | | | [22] [2,153] | Ca. 1550 | | | | CS (A), p. 124. |
| | | | 100 | 400 | 1560 | | | | CS (B), p. 124. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 208.[67] |
| | | do | 700 | 2,800 | Ca. 1569–71 | | | [60] T-M | Doctrinas, pp. 239–240. |
| | | do | 700 | 2,800 | Ca. 1570 | | | [60] T-M | Epistolario 14: 80. |
| | | | 700 | 2,800 | 1571 | | | | López de Velasco, p. 219. |
| | | Crown | 450 | 1,800 | 1580 | | | [60] T-M | Paso y Troncoso 5: 107–108. |
| | | do | 312 | 1,248 | 1609 | | | [60] T-M | Mota y Escobar, p. 200. |
| 35 | "Tlapostectlan" [2a] | | | | | 2,800* | 1,975 | | *CS, pp. 124–125. |
| | | | 40 | 160 | Ca. 1569–71 | | | T | Doctrinas, pp. 204–205. |
| | | | 40 | 160 | 1571 | | | | López de Velasco, p. 216. |
| 36 | Tonayán | | | | | | 160 | | |
| | | | | [22] [431] | Ca. 1550 | | | | CS (A), p. 132. |
| | | | 140 | 560 | Ca. 1569–71 | | | T | Doctrinas, pp. 204–205. |
| | | | 140 | 560 | 1571 | | | | López de Velasco, p. 216. |
| 37 | "Yohualtlacualoyan" [2a] | | | | | 560* | 560 | | *CS, pp. 132–133. |
| | | Crown | 400 | 1,600 | 1610 | | | T | Mota y Escobar, p. 222. |
| 38 | Zozocolco [2a] | | | | | | 1,600 | | |
| | | Crown | 240 | 960 | Ca. 1569–71 | | | [60] T-M | Doctrinas, pp. 210–213. |
| | | do | 300 | 1,200 | Ca. 1570 | | | [60] T-M | Epistolario 14: 76. |
| | | | | | 1581 | | | T | Relación de Jojupango. |
| | | Crown | | | 1610 | | | T | Mota y Escobar, p. 232. |
| | | | | | | | 1,080 | | |
| | Subtotal | | | | | 31,341 | 37,417 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | PUEBLA | | | | | | | | |
| 39 | Ameluca | | | [22] [62] | Ca. 1550 | | | | CS (A), p. 64. |
| | | Crown | 20 | 80 | Ca. 1570 | | | T | Epistolario 14: 74. |
| | | | | | | 80* | 80 | | *CS, pp. 64–65. |
| | Ameluca with Pantepec and Huitzila.[2] | Crown | 200 | [34] [800] | Ca. 1569–71 | | | [55] T–M–O–Tep. | Doctrinas, p. 219. |
| | | | | | | | [52] [800] | | |
| 40 | Ayotochco (see Jonotla, No. 54) | [Crown] | | | 1581 | | | [60] [T–M] | Paso y Troncoso 5: 136. |
| 41 | "Caxitlantongo"[2] | Cristóbal de Tapia | 40 | 160 | Ca. 1570 | | | [60] [T–M] | Epistolario 14: 74. |
| | | | | | | | 160 | | |
| | "Caxitlantongo" with Huitzila | | | [35] [369] | Ca. 1550 | | | | CS (A), p. 66. |
| | | | | | | 480* | [53] [480] | | *CS, pp. 66–67. |
| 42 | Chila[2] | | 2,000 | [21] [8,000] | Ca. 1519 | | | | Relación de "Matlatlan" y Chila. |
| | | Francisco de Montejo[18] | 331 | 1,324 | Ca. 1550 | | | | Suma, No. 136. |
| | | Alvaro Maldonado [*sic*][18] | | | Ca. 1565 | | | | CS, p. 179.[67] |
| | | Catalina de Montejo | 350 | 1,400 | Ca. 1569–71 | | | [60] T–M | Doctrinas, pp. 218–219. |
| | | | 700 | 2,800 | 1571 | | | | López de Velasco, p. 218. |
| | | | 180 | 720 | 1610 | | | T | Mota y Escobar, p. 229. |
| | | | | | | | 1,561 | | |
| | Chila with "Matlatlan"[9] | Licenciado Maldonado[18] | 2,260 | [26] [9,040] | 1560 | | | | Epistolario 9:7. |
| | | Catalina de Montejo | | | 1565–70 | | | | García Pimentel, 1904, p. 157. |
| | | do | | | Ca. 1570 | | | [60] T–M | Epistolario 14:78. |
| | | do | 400 | [35] [1,600] | 1581 | | | T | Relación de "Matlatlan" y Chila. |
| | | | | | | 6,400* | [54] [5,320] | | *CS, pp. 66–67. |
| 43 | "Cuauhtlapehualco"[2a] | Crown | | | 1610 | | | T–M–O | Mota y Escobar, p. 243. |
| 44 | Cuautenco[2a, 8a] | | | | Pre-Conquest | | | T | Paso y Troncoso 5:152. |
| 45 | "Esamayeco" (see Hueytlapan, No. 48). | | | | | | | | |
| 46 | Ecatlán (see Jonotla, No. 54) | [Crown] | | | 1581 | | | [60] T–M | Paso y Troncoso 5:139–140. |
| 47 | Huauchinango[2] | Alonso de Villanueva[19] | 1,143 | 4,572 | Ca. 1550 | | | | Suma, No. 269. |
| | | Agustín de Villanueva | | | Ca. 1565 | | | | CS, p. 181.[67] |
| | | | 3,700 | 14,800 | 1571 | | | | López de Velasco, p. 196. |
| | | Catalina de Peralta | 2,242 | 8,068 | 1597 | | | | Epistolario 13:37. |
| | | do | 2,500 | 10,000 | 1609 | | | T–M–O | Toussaint, pp. 294–295. |
| | | | | | | | 9,585 | | |
| | Huauchinango with Ocelotepec | Agustín de Villanueva[19] | 3,900 | [36a] [15,600] | 1560 | | | | Epistolario 9:15. |
| | | do | 2,900 | [36a] [11,600] | 1565–70 | | | | García Pimentel, 1904, p. 165. |
| | | | | | | 13,284* | [54a] [13,600] | | *CS, pp. 66–67. |
| 48 | Hueytlalpan[2] | Crown | | | Ca. 1565 | | | | CS, p. 182.[67] |
| | | do | 1,730 | [37] [6,920] | Ca. 1569–71 | | | [60] T–M | Doctrinas, p. 213. |
| | | do | 1,710 | [37] [6,840] | Ca. 1570 | | | [60] T–M | Epistolario 14:77. |
| | | | 1,730 | [37] [6,920] | 1571 | | | | López de Velasco, p. 217. |
| | | Crown | | | 1581 | | | T | Relaciones de Hueytlalpan, Papantla, Jojupango. |
| | | do | 286 | [37] [1,144] | 1610 | | | T | Mota y Escobar, pp. 226–227. |
| | | | | | | | [55] [5,456] | | |
| | Hueytlalpan with "Esamayeco" and Zongozotla. | | | [22] [5,292] | Ca. 1550 | | | | CS (A), p. 66. |
| | | | 1,000 | 4,000 | 1560 | | | | CS (B), p. 66. |
| | | | 1,730 | 6,920 | 1579–84 | | | | CS (O), pp. 66–67. |
| | | | | | | 6,880* | 5,460 | | *CS, pp. 66–67. |
| 49 | Huitzila[2] | Crown | 80 | 320 | Ca. 1570 | | | [60] T–M | Epistolario 14:74. |
| | | | | | | | 320 | | |
| | Huitzila with Ameluca and Pantepec (see Ameluca, No. 39). | | | | | | | | |
| | Huitzila with "Caxitlantongo" (see "Caxitlantongo," No. 41) | | | | | | | | |
| 50 | Huitzilan with Zapotitlán[2a] | Crown | 318 | 1,272 | 1610 | | | T | Mota y Escobar, p. 227. |
| | | | | | | | 1,272 | | |
| 51 | Ixtepec | | | [22] [616] | Ca. 1550 | | | | CS (A), p. 72. |
| | | Crown | 175 | 700 | 1552 | | | | Epistolario 8:154. |
| | | [Crown] | | [38] [650] | Ca. 1569–71 | | | [66] M | Doctrinas, p. 214. |
| | | Crown | 200 | 800 | Ca. 1570 | | | [66] M | Epistolario 14:77 |
| | | | | | 1610 | | | [66] T | Mota y Escobar, p. 226. |
| | | | | | | 800* | 750 | | *CS, pp. 72–73. |
| 52 | Jalpan | | | [22] [923] | Ca. 1550 | | | | CS (A), p. 68. |
| | | Cristóbal de Tapia | 300 | 1,200 | Ca. 1570 | | | [T–M–O] | Epistolario 14:74. |
| | | Andrés de Tapia | 200 | 800 | 1610 | | | [T–M–O?] | Mota y Escobar, p. 242. |
| | | | | | | 1,200* | 1,000 | | *CS, pp. 68–69. |
| | Jalpan with Tancoco, Tihuatlán, "Tuzapan," and Papantla (see Papantla, No. 29). | | | | | | | | |

See footnotes at end of table.

TABLE 14.—*Language and population in sixteenth-century Totonacapan*—Continued

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Calculated population | | | |
| Key No., map 1 | Pueblo | Ownership | Tributaries | Population | Date | In 1565, after Cook and Simpson | Our average, ca. 1550–1610 | Language | Sources |
| | PUEBLA—Continued | | | | | | | | |
| 53 | Jojupango | Gonzalo de Salazar and Diego de Padierna.[19a] | 534 | 2,136 | Ca. 1550 | | | | Suma, No. 798. |
| | | Gonzalo de Salazar and Diego de Villapadierna. | 460 | 1,840 | 1552 | | | | Epistolario 6:165. |
| | | do | 2,600 | [39] [10,400] | 1560 | | | | Epistolario 9:19. |
| | | do | | | Ca. 1565 | | | | CS, p. 186.[67] |
| | | do | 700 | 2,800 | Ca. 1569–71 | | | [60] [T–M] | Doctrinas, pp. 218–219. |
| | | Gonzalo de Salazar and Villapadierna. | 800 | 3,200 | Ca. 1570 | | | [60] T–M | Epistolario 14:78. |
| | | | 700 | 2,800 | 1571 | | | | López de Velasco, p. 218. |
| | | | 400 | 1,600 | 1579–84 | | | | CS (O), pp. 68–69. |
| | | Gonzalo de Salazar and Diego de Villapadierna. | | | 1581 | | | T | Relación de Jojupango. |
| | | Diego de Villapadierna and Fernando de Salazar. | 727 | 2,908 | 1597 | | | | Epistolario 13:43. |
| | | Crown | 510 | 2,040 | 1610 | | | T | Mota y Escobar, p. 229. |
| | | | | | | 3,200* | 2,416 | | *CS, pp. 68–69. |
| | Jojupango with "Tonatico"[2] | Diego de Padierna and Gonzalo de Salazar. | 800 | [40] [3,200] | 1565–70 | | | | García Pimentel, 1904, p. 169. |
| | | | | | | | [58] [3,200] | | |
| 54 | Jonotla (includes Ayotochco, Ecatlán and Tuzamapan).[5b] | Crown | 273 | 1,092 | Ca. 1550 | | | | Suma, No. 294. |
| | | do | 400 | 1,600 | 1552 | | | | Epistolario 8:154. |
| | | do | 450 | 1,800 | 1560 | | | | CS (B), p. 68. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 186.[67] |
| | | do | 925 | 3,700 | Ca. 1569–71 | | | [60] T–M | Doctrinas, pp. 210–212. |
| | | do | 800 | 3,200 | Ca. 1570 | | | [60] T–M | Epistolario 14:76. |
| | | do | 758 | 3,032 | 1579–84 | | | | CS (O), pp. 68–69. |
| | | Crown | 200 | 800 | 1581 | | | [60] T–M | Paso y Troncoso 5:124–127. |
| | | do | 140 | 560 | 1610 | | | T | Mota y Escobar, p. 225. |
| | | | | | | 3,200* | 1,973 | | *CS, pp. 68–69. |
| 55 | Jopala[2a] | | | | 1623 | | | [T] | Mota y Escobar, p. 301. |
| 56 | "Matlatlan"[9] | | 2,000 | [21] [8,000] | Ca. 1519 | | | | Relación de "Matlatlan" y Chila. |
| | | Catalina de Montejo | 350 | 1,400 | Ca. 1569–71 | | | [60] [T–M] | Doctrinas, pp. 218–219. |
| | | do | | | 1581 | | | T | Relación de "Matlatlan" y Chila. |
| | | | | | 1610 | | | T | Mota y Escobar, p. 229. |
| | | | | | | | 1,400 | | |
| 57 | Olintla[2a] | Crown | | | 1610 | | | T | Mota y Escobar, p. 228. |
| 58 | Pahuatlán[2] | Luis de la Torre[20] | | | 1539 | | | | Epistolario 8: 14. |
| | | do | 701 | 2,804 | Ca. 1550 | | | | Suma, No. 474. |
| | | Luisa de Acuña | 2,485 | 9,940 | 1555 | | | | Epistolario 8: 14–15. |
| | | Luis de la Torre | | | Ca. 1565 | | | | CS, p. 193.[67] |
| | | | 2,000 | 8,000 | 1571 | | | | López de Velasco, p. 226. |
| | | Luisa de Acuña | 2,000 | 8,000 | Ca. 1569–71 | | | T–M–O | Doctrinas, pp. 278–281. |
| | | | | | | | 7,186 | | |
| | Pahuatlán with Acaxochitlán | Luisa de Acuña | 3,260 | [41] [13,040] | 1560 | | | | Epistolario 9: 2. |
| | | do | 3,584 | [41] [14,336] | 1565–70 | | | | García Pimentel, 1904, p. 155. |
| | | | | | | *3,600 | [57] [13,688] | | *CS, pp. 58–59. |
| 59 | Pantepec | | | [22] [285] | Ca. 1550 | | | | CS (A), p. 68. |
| | | Crown | 30 | 120 | Ca. 1570 | | | [T–M–O] | Epistolario 14: 74. |
| | | | 155 | 620 | 1571 | | | | López de Velasco, p. 218. |
| | | Crown | 30 | 120 | 1610 | | | T–M–O | Mota y Escobar, p. 242. |
| | | | | | | *370 | 287 | | *CS, pp. 68–69. |
| | Pantepec with Ameluca and Huitzila (see Ameluca, No. 39). | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 60 | Pápalo [19] | | | [22] [1, 534] | Ca. 1550 | | | | CS (A), p. 68. |
| | | Juan de la Torre | 300 | 1, 200 | 1560 | | | | Epistolario 9: 22. |
| | | do | | | Ca. 1565 | | | | CS, p. 193.[67] |
| | | do | 300 | 1, 200 | Ca. 1570 | | | T–M–O | Epistolario 14: 73. |
| | | do | 500 | 2, 000 | Ca. 1569–71 | | | T–M–O | Doctrinas, p. 223. |
| | | Luis de la Torre [20a] | 508 | 2, 032 | 1597 | | | | Epistolario 13:39. |
| | | Crown | | | 1610 | | | T–M–O | Mota y Escobar, p. 243. |
| | Pápalo with Tlacuilotepec [11] | Juan de la Torre | 300 | [42] [1, 200] | 1565–70 | | 1, 608 | | García Pimentel, 1904, p. 172. |
| | | | | | | *2, 000 | [58] [1, 200] | | *CS, pp. 68–69. |
| 61 | San Cristóbal [3a] | | | | 1610 | | | T | Mota y Escobar, p. 225. |
| 62 | Tenampulco | Diego Valadés | 160 | 640 | Ca. 1550 | | | | Suma. No. 527. |
| | | Diego de Valadés | 150 | 600 | 1560 | | | | Epistolario 9: 26. |
| | | do | | | Ca. 1565 | | | | CS, p. 203.[67] |
| | | Diego Valadés | 150 | 600 | 1565–70 | | | | García Pimentel, 1904, p. 177. |
| | | Valadés | 200 | 800 | Ca. 1570 | | | [60] T–M | Epistolario 14: 76–77. |
| | | Francisco Valadés | 200 | 800 | 1581 | | | T | Relación de Papantla. |
| | | Alonso Valadés | 73 | 292 | 1597 | | | | Epistolario 13:42. |
| | | | | | | *700 | 622 | | *CS, pp. 70–71. |
| 63 | Tlacuilotepec [11] | | | [22] [2, 960] | Ca. 1550 | | | | CS (A), p. 70. |
| | | Juan de la Torre | 390 | 1, 560 | 1560 | | | | Epistolario 9: 22. |
| | | do | | | Ca. 1565 | | | | CS, p. 208.[67] |
| | | | 962 | 3, 848 | 1569–71 | | | | CS (H), p. 70. |
| | | Juan de la Torre | 950 | 3, 800 | Ca. 1569–71 | | | T–M–O | Doctrinas, pp. 282–283. |
| | | do | 655 | 2, 620 | 1597 | | | | Epistolario 13: 41. |
| | | "*Encomendero*" | | | 1610 | | | | Mota y Escobar, p. 244. |
| | | | | | | *3, 848 | 2, 957 | | *CS, pp. 70–71. |
| 64 | "Tonatico" [12] | Crown | 236 | 944 | Ca. 1550 | | | | Suma, No. 529. |
| | | Diego de Villapadierna and Gonzalo de Salazar. [19a] | 600 | [43] [2, 400] | 1560 | | | | Epistolario 9: 19. |
| | | Padierna and Gonzalo de Salazar | 100 | 400 | Ca. 1570 | | | [60] T–M | Epistolario 14: 76–77. |
| | | Diego de Villapadierna and Gonzalo de Salazar | | | 1581 | | | T | Relaciones de Papantla, Jojupango. |
| | | "*Encomendero*" | | | 1610 | | | T | Mota y Escobar, p. 232. |
| | | | | | | *400 | 672 | | *CS, pp. 68–69. |
| 65 | Totutla [2a, 8a] | | | | Pre-conquest | | | T | Paso y Troncoso 5: 168. |
| 66 | Tuzamapan (see Jonotla, No. 54) | [Crown] | | | 1581 | | | [60] T–M | Paso y Troncoso 5: 132. |
| 67 | "Tuzapan" [2, 12a] | | | | | | | T | Mendieta 4: 95–96. |
| | | Andrés de Tapia | 1, 023 | 4, 092 | Ca. 1550 | | | | Suma, No. 526. |
| | | Cristóbal de Tapia | 880 | 3, 520 | 1597 | | | | Epistolario 13:42. |
| | | | | | | | 3, 806 | | |
| 68 | Villa Juárez [13] (formerly "Jicotepec"). | Crown | 476 | 1, 904 | Ca. 1550 | | | | Suma, No. 803. |
| | | | 1, 100 | 4, 400 | 1560 | | | | CS (B), p. 68. |
| | | Crown | | | Ca. 1565 | | | | CS, p. 185.[67] |
| | | do | 1, 500 | 6, 000 | Ca. 1569–71 | | | T–M–O | Doctrinas, pp. 222–223. |
| | | do | 1, 000 | 4, 000 | Ca. 1570 | | | T–M–O | Epistolario 14: 73–74. |
| | | | 1, 500 | 6, 000 | 1571 | | | | López de Velasco, p. 218. |
| | | "*Encomendero*" | | | 1610 | | | [60] T–M | Mota y Escobar, p. 243. |
| | | | | | | *5, 000 | 4, 461 | | *CS, pp. 68–69. |
| 69 | Zacatlán | | | [22] [9, 246] | Ca. 1550 | | | | CS (A), p. 72. |
| | | | 8, 000 | 32, 000 | Before 1555 | | | | Epistolario 8: 4. |
| | | Antonio de Carvajal | 2, 081 | 8, 324 | 1555 | | | | Epistolario 8: 4. |
| | | do | 1, 840 | 7, 360 | 1560 | | | | Epistolario 9: 14. |
| | | do | | | Ca. 1565 | | | | CS, p. 216.[67] |
| | | do | 3, 150 | 12, 600 | 1565–70 | | | | García Pimentel, 1904, p. 159. |
| | | | 2, 860 | 11, 440 | 1571 | | | | López de Velasco, p. 223. |
| | | | | | 1581 | | | T | Relación de Jojupango. |
| | | Antonio de Carvajal | 1, 500 | 6, 000 | 1581 | | | [60] T–M | Relación de Zacatlán. |
| | | | | | 1586 | | | [60] T–M | Ponce 1: 209. |
| | | Antonio de Cárvajal | 2, 108 | 8, 432 | 1597 | | | | Epistolario 13:36. |
| 70 | Zapotitlán (see Huitzilan, No. 50). | | | | | *12, 020 | 12, 308 | | *CS, pp. 72–73. |
| 71 | Zongozotla [2] | [Crown] | | [3, 220] | Ca. 1569–71 | | | [60] T–M | Doctrinas, pp. 214–216. |
| | | | | | | | [59] [3, 220] | | |
| | Subtotal | | | | | 63, 462 | 59, 884 | | |

See footnotes at end of table.

TABLE 14.—*Language and population in sixteenth-century Totonacapan*—Continued

| A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|
| Key No. Map 1 | Pueblo | Ownership | Tributaries | Population | Date | Calculated population: In 1565, after Cook and Simpson | Calculated population: Our average, ca. 1550–1610 | Language | Sources |
| | HIDALGO | | | | | | | | |
| 72 | Acaxochitlán [16] | Luis de la Torre [20] | | | 1539 | | | | Epistolario 8:23. |
| | | Luisa de Acuña | 570 | 2,280 | 1555 | | | | Epistolario 8:24. |
| | | do | | | Ca. 1565 | | | | CS, p. 166. |
| | | do | 1,700 | 6,800 | Ca. 1569–71 | | | [6a] T–M–O | Doctrinas, pp. 270–272. |
| | | do | 900 | 3,600 | Ca. 1570 | | | M–O | Epistolario 14:73. |
| | | do | 529 | 2,116 | 1597 | | | | Epistolario 13:35. |
| | | Crown | | | 1610 | | | | Mota y Escobar, p. 244. |
| | | | | | 1623 | | | M | Mota y Escobar, p. 303. |
| | | | | | | | 3,699 | | |
| | Subtotal | | | | | | 3,699 | | |
| | Total | | | | | 94,803 | 101,000 | | |

[1] Language: 1519 to 1623. Population: *ca.* 1550 to 1610. Headings appear in lettered columns, as follows:

A. Each pueblo is numbered to correspond with entries on map 1; owing to insufficient data, Nos. 20, 28, and 45 do not appear on the map.

B. Pueblos are listed in alphabetical order, by modern state: Nos. 1 to 38, in Verecruz; 39 to 71, in Puebla; 72, in Hidalgo. Spelling follows that of the 1930 Federal census, except in the case of now extinct settlements, whose names appear in quotation marks, with the original orthography preserved.

C. Pueblo ownership is indicated, be it Crown or *encomendero*. When ownership is implied but is not stated explicitly by the source, the entry is within brackets.

D. In this column is given the number of tributaries specified by each source. As a rule, a single figure is given for a pueblo and its various subject settlements. If more than one major pueblo is included, Column B shows which towns have been combined. We have followed Cook and Simpson (pp. 11–13) in combining, under tributaries, the diverse terms used by individual sources—*vecinos, casados, tributarios, pesos de tributo*, and so on.

E. The number of tributaries (from col. D) has been converted into number of inhabitants, at the ratio of four individuals per tributary, as suggested by Cook and Simpson (pp. 17–18). Bracketed entries have not been taken into consideration in calculating the averages given in column H.

F. The date approximate or specific, of each source is indicated; when not given in the original, we have followed the dating suggested by Cook and Simpson (pp. 3–9), except for the Suma, which we date as ca. 1550. The two set of documents which are cited as Doctrinas appear as of 1569–71, although some of the individual documents may be dated 1569 or 1571. In some cases, a source mentions previous conditions; for example, it may give the population of 15 years before, or that at the time of the Spanish Conquest. In such instances, column indicates the date to which the information applies, not that of the document which is being cited.

G. In this column is given the population, pueblo by pueblo, for *ca.* 1565, according to the reckoning of Cook and Simpson. Their calculation is followed by an asterisk, and the same symbol indicates, in column J, the page reference. The work of Cook and Simpson is cited as: CS.

A blank in column G indicates either that the town is not listed by Cook and Simpson or that it appears in combination with other pueblos, and they have not presented a separate calculation. At the foot of the column, the Cook and Simpson estimate is totaled.

H. This column gives the average population, by pueblo, from the years *ca.* 1550 to 1610, according to our reckoning. Figures within brackets have been ignored in calculating the total, which appears at the foot of the column.

I. Language is indicated according to the following key: T, Totonac; M, Mexicano (including also cases listed by the sources as Nahua); O, Otomí; H, Huasteca; Tep., Tepehua. When linguistic affiliations are implied but are not stated explicitly, the entry is within brackets.

J. Sources are discussed in the text of Appendix A. Those which we have consulted are entered individually. Unpublished material used by Cook and Simpson, but not accessible to us, appears as CS, followed by a letter in parentheses, the latter referring to their key (Cook and Simpson, pp. 3–9).

In addition, two published sources are cited similarly, as CS, followed by a key letter. CS (A) refers to certain estimates made by Cook and Simpson, supposedly on the basis of data taken from the Suma de Visitas; we have not been able to determine the source of their figures. CS (L) refers to a document published by García Pimentel, 1904, in which we have been unable to locate for one pueblo, the data cited by Cook and Simpson.

In order to avoid repetition, subsequent explanatory notes are arranged by column; below, as in the table, the study of Cook and Simpson is cited as CS.

*Column B*

[1a] Appears in CS (p. 188) as "Mexcalcingo" but apparently is duplicated under Atzalan or Atzalán. The former (CS, p. 171) is attributed to the Bishopric of Tlaxcala but does not appear under that heading (CS, p. 136). Nevertheless, under No. 487 (CS, p. 232), the numerical index lists an Atzalán, which appears, without accent (CS, pp. 118–119) as a pueblo of Veracruz.

For this Atzalan, CS give a population figure ostensibly from the Suma, but authority for which we are unable to locate. Their second source (N) is López de Velasco, whose data apply, we believe, to the Atzalan which we have identified with "Mexcalçingo." It is not a matter of chance that López de Velasco (pp. 221–222) gives 1,700 tributaries for "Acala" and its subject pueblos, while source O of CS (p. 69) gives precisely the same figure for "Mexcalcingo."

In any case, we believe that the "Mexcalçingo" of our sources is to be identified with modern Atzalan, near Jalacingo. The Epistolario (14:80) mentions "Açalamescalçingo," clearly combining the two names. Moreover, it gives Andrés Dorantes as *encomendero*, as does the Suma (No. 351) for "Mexcalçingo" (see footnote 15 to this table). Doctrinas (p. 264) lists an "Açala," of Totonac speech, but unfortunately does not specify either *encomendero* or location. Nevertheless, the identity of "Mexcalçingo" with Atzalan is virtually clinched by other evidence. In 1597, Antonia de Benavides appears as *encomendera* of "Açala" (Epistolario 13:35), and she is the daughter of Alonso de Benavides, first *encomendero* of "Mexcalçingo" (García Pimentel, 1904, p. 169; Icaza, No. 281).

[2] Appears in CS, but population calculations are given in different combination.

[2a] Does not appear in CS.

[3] Appears in CS (pp. 132–133) as "Chicocentepec" ("Vera Cruz—unidentified"); also, under the same name, is allocated to "Vera Cruz [Naolingo]" (CS. p. 178).

[4] Appears in CS (p. 179) as Chiltoyac ("Bish. of Tlaxcala"), but is not included in the section (pp. 136–137) dedicated to the corresponding bishopric.

[4a] "Pangolotla" appears in CS (p. 132) under "Vera Cruz—unidentified," not under the "Bish. of Tlaxcala," as it is listed in their index.

Although CS (p. 132) give population figures for "Pangololutla," we have not cited them. In the first place, we cannot discover the source of the figure which they attribute to the Suma (their source A). In the second place, their source B refers not to "Pangololutla," but to a combination of Chiltoyac, "Pangololutla" and "Maçaltajola" (Epistolario 9:22). In the third place, their remaining source, L (García Pimentel, 1904, p. 170), lists the Chiltoyac trio mentioned above, but its population data appear to apply to a pueblo in Oaxaca.

[5] Appears in CS (p. 217) as "Zihuacoatlán."

[6] Appears in CS (p. 235) in company with pueblos grouped with Naolingo.

[6a] CS evidently have confused Jilotepec, of Veracruz, with "Jolotepec" and possibly with "Yolotepeque," of Oaxaca. Without detailed study of the Oaxacan material, we cannot say if the two latter pueblos are one and the same. There is one reference to the crown pueblos of "Xolotepeque" and "Xilotepeque," in Oaxaca (García Pimentel, 1904, p. 71). However, "Jolotepeque," "Yolotepeque," and "Ilotepeque" are attributed to Alonso de Castellanos (Epistolario 9:32, 13:38; García Pimentel, 1904, pp. 167–168). Through error, Alonso de Castellanos appears in CS (p. 185) as *encomendero* of Jilotepec, Veracruz.

*Column B*—Continued

It is the latter pueblo which is of direct concern to us; under its name, CS have combined data which apply both to it and to one (or more) Oaxacan towns. We have been unable to verify the figure which they attribute to source A (Suma). Their sources B and L definitely refer to Oaxaca (Epistolario 9:32; García Pimentel, 1904, pp. 167–168). Their sources D and N apply to the Jilotepec of Veracruz (Epistolario 14:80–81; López de Velasco, p. 219). Their source O refers to the *relaciones geográficas*, some of which are published in Paso y Troncoso, and others of which are not available to us. Although Paso y Troncoso (5:106) gives the number of tributaries found in Jilotepec of Veracruz, the figure does not agree with that which CS attribute to source O. It seems likely that here, too, their population refers to a town in Oaxaca.

To add to the confusion, under "Yolotepec" and "Jolotepec," in Oaxaca, CS (pp. 102, 106) give further population data.

[7] CS (pp. 66–67) give Mecatlán combined with Chila, apparently having identified our "Matlatlan" with Mecatlán. However, two distinct pueblos are involved. "Matlatlan" no longer exists, but both towns appear on a map (Carta general) of relatively recent date.

[8] Appears in CS (p. 168) as "Almería." The latter is definitively identified wiih Nautla ay numerous sources (Torquemada 1:521; Ixtlilxochitl 2:271; Epistolario 1:75–76; Oviedo 3:262; Clavijero 2:160).

[8a] Queried on our map, not because location is dubious, but because the report of Totonac speech applies to legendary times.

[8b] As well as other subject settlements.

[9] CS (pp. 66–67) erroneously identify "Matlatlan" with Mecatlán; see footnote 7, above.

[10] Listed by CS (p. 193) as "Paploctipa."

[11] Tlaculiotepec appears once as such in CS (p. 208) and again as "Tlacolultepec" (CS, p. 208).

[12] CS (pp. 68–69) list two separate pueblos, "Matlaque" and "Tonatico" (incidentally, under No. 70, instead of No. 75; cf. CS, p. 221). We believe a single town is involved; our sources sometimes refer to it as "Matlaquetonatico," sometimes as "Tonatico." The CS total of 400 inhabitants has been cited in our table because, despite the fact that the two towns are entered separately, CS have combined the population.

Another "Tonatico" apparently appears in CS, although only one is to be found in their alphabetical index (p. 210). No. 75, of their numerical index, covers Jojupango, "Matlaque," and Tonatico," while No. 602 presumably refers to a different "Tonatico." On the CS map, No. 75 is in the vicinity of Jojupango, while No. 602 occupies the position of our "Tonatico."

[12a] Meade (pp. 289–290) and CS (pp. 122–123) identify "Tuzapan" with modern Tuxpan. However, the archeological site of "Tuzapan," on the Puebla-Veracruz border, is well known; and the Tajín Totonac speak of "Tuzapan" with considerable familiarity. Furthermore, many sources (Mendieta 4:95–96; Epistolario 9:22 and 14:77; García Pimentel, 1904, pp. 172–173; Doctrinas, p. 220; Ixtlilxochitl 2:37) make it clear that the two pueblos are quite distinct. See also footnote 32, below.

[13] Appears in CS (p. 185) under its ancient name of "Jicotepec."

[14] In CS (pp. 58–59, 223) the population of this pueblo is combined with that of Pahuatlán.

In Acaxochitlán proper, Mexicano and Otomí were spoken; but several subject settlements are said to have been Totonac. These include: "Quaquacala," "Chapantla," "Heloxochitlan," "Xolotla," "Navpa," "Tlaxpanaloya," and "Chachavantla." Most are difficult to identify, but it is clear that they were situated at no great distance from Acaxochitlán.

*Column C*

[15] The first *encomendero* was Alonso de Benavides (García Pimentel, 1904, p. 169). Although he appears in the Epistolario (9:18) as Alvaro de Benavides, his own family gives his name as Alonso (Icaza, No. 281).

Following his death, the property passed to his widow, María de la Torre (García Pimentel, 1904, p. 169). She married Andrés Dorantes (Epistolario 9:18), and, in 1553, Dorantes appears as *encomendero* (Epistolario 7:61). He died some time between that date and 1560 (Epistolario 9:18), so should not appear as *encomendero* in subsequent records (cf. CS, p. 188; Epistolario 14:80).

Eventually, the property passed to Antonia de Benavides, daughter of Alonso de Benavides and María de la Torre (García Pimentel, 1904, p. 169; Icaza, No. 281).

[16] Diego de Porras was the first *encomendero* (Epistolario 9:6). He died prior to 1553 (Epistolario 7:1–2), whereupon the *encomienda* passed into the hands of his daughter, María de Porras, and her husband, Juan de Cuenca (Epistolario 7:1–2, 9:6; García Pimentel, 1904, p. 156).

[17] We do not pretend to understand the sequence of *encomenderos*. The first was Lucas Gallego (Epistolario 9:15; García Pimentel, 1904, pp. 165–166). We have not made a thorough search but have come upon no mention of him later than 1527 (Millares and Mantecón, No. 347).

In 1551, Miguel Arias speaks of himself as "encomendero del pueblo de Cuacuaçintla" (Millares and Mantecón, No. 2605). In 1560 and 1565–1570, the *encomienda* is attributed merely to the son of Lucas Gallego (Epistolario 9:15; García Pimentel, 1904, pp. 165–166). But in 1569–71 and about 1570, Miguel Arias once more crops up as *encomendero* (Doctrinas, p. 242; Epistolario 14:81). It may be assumed that he was a relative, either by blood or by marriage, for the *encomienda* remained in the Gallego family, at least until the latter years of the century, when it was in the name of Domingo Gallego.

Paso y Troncoso (footnote 4, 5:109) suggests that Domingo Gallego may have been the son of Lucas Gallego; for the intrusion of Miguel Arias, he finds no explanation.

[18] Francisco de Montejo, the first *encomendero* (García Pimentel, 1904, p. 157), must have died late in 1553 or early in 1554 (Epistolario 7:202). He was succeeded by his daughter, Catalina de Montejo, and by her husband. Although the latter appears in CS (p. 179) as Alvaro Maldonado, his wife twice refers to him as Alonso Maldonado (Epistolario 7:203, 10:80). Following his death, in 1564 (Epistolario 10:81), Catalina de Montejo continued to hold the pueblos granted originally to her father (García Pimentel, 1904, p. 157).

[19] Alonso de Villanueva, the first *encomendero*, was succeeded by his son, Augustín Villanueva (Epistolario 9:15). Catalina de Peralta was the latter's widow (Toussaint, p. 295).

[19a] Originally, half interest was granted to Alonso de Avila. Before his death it passed—through his daughter, as part of her dowry—to his son-in-law, Gonzalo de Salazar (García Pimentel, 1904, p. 169; see also Icaza, No. 431).

The other half was held in *encomienda* by Diego de Villapadierna, whose son, Diego (called Diego Padierna, in García Pimentel, 1904, p. 169), inherited his father's share.

[20] Pahuatlán and Acaxochitlán were given in *encomienda* to Luis de la Torre, and upon his death, they passed to the widow, Luisa de Acuña (García Pimentel, 1904, p. 155). Evidently he demised prior to 1560 (Epistolario 9:2), hence should not appear as *encomendero* as late as *ca.* 1565 (CS, p. 193).

[20a] Luis de la Torre was the first grantee (García Pimentel, 1904, p. 172), but as early as 1560 the pueblo had passed to his nephew, Juan de la Torre (Epistolario 9:22).

The first *encomendero* presumably was the same Luis de la Torre, who held Pahuatlán and Acaxochitlán (preceding footnote). If so, he died prior to 1560, hence could not have been *encomendero* of Pápalo as late as 1597. Presumably reference is to another individual of the same name, and of a younger generation.

*Column E*

In reckoning the average population, for entries in column H, the figures which appear in brackets have been excluded, for the following reasons:

[21] Date prior to *ca.* 1550.

[22] We have been unable to verify the estimate of CS, attributed to the Suma; in any case, we have precise data from other sources.

[23] Population figure conflicts with those of other sources. The Suma (No. 351) credits Atzalan with 1,300 tributaries, in *ca.* 1550; García Pimentel (1904, p. 169) gives the same figure for 1565–70. Other sources vary, but none as markedly as the Epistolario (9:18), which reports 3,900 tributaries in 1560.

[24] Population combined with that of Jalacingo (for which we have independent sources) and Altotonga, the latter on the borders of Totonacapan, but Mexicano in speech.

[25] Since only two subject settlements are included, whereas the Suma (No. 116) gives 8 and Doctrinas (pp. 233–234), 5. We have assumed, perhaps unjustifiably, that the "Mecatlan" and "Cocuitlan" which appear with Chichilintla (Epistolario 13:35) are subject settlements and not major pueblos.

[26] Because the García Pimentel data are garbled; the text implies that both Chiconquiaco and Miahuatlán are involved, yet with respect to population, the verb is singular. As a consequence, we cannot be sure if the figure applies to one or to both pueblos. For this reason, the population has not been counted here, nor is it listed under Miahuatlán (No. 23).

[27] Because the population of Chiconquiaco and Miahuatlán is combined, whereas we have separate figures for each pueblo.

[28] Because the population is given for Chiltoyac alone. We have a separate estimate for Chiltoyac, together with two other pueblos, "Pangololutla" and "Maçaltajola." The two latter do not figure in other sources, but we assume that they were of Totonac speech. Since we have no definite statement to that effect, neither "Pangololutla" nor "Maçaltajola" appears on map 1.

[29] Because the population of Jalacingo is given in combination with that of Altotonga and Tlapacoyan. For Jalacingo, we have separate data; the other two pueblos are on the borders of Totonacapan but were Mexicano in speech.

[30] The population of Meclatlán and Chichilintla is lumped; for each pueblo we have separate data.

[31] Because the population of Papantla and "Tuzapan" is combined; we have separate figures for each pueblo.

[32] Because the population is given for Papantla, "Tuzapan," and Tuxpan. For the first two, we have separate data; Tuxpan lies outs de of our zone.

[33] Because the population of Jalpan, Tancoco, Tihuatlán, "Tuzapan," and Papantla is lumped. For Jalpan, Papantla, and "Tuzapan," we have separate data. Unfortunately, we have no information which would permit calculation of the population of Tihuatlán. Tancoco lies outside the limits of Totonacapan.

[34] Because the population of Ameluca, Pantepec, and Huitzila, is combined; we have separate estimates for each pueblo.

[35] The estimate for "Caxitlatongo" and Huitzila is lumped, and we have separate data for each pueblo. The entry (480) in column H is not an average but is the sum of the figures given separately for "Caxitlatongo" (No. 41) and for Huitzila (No. 49). Inasmuch as both these pueblos appear individually in the table, here the combined figure is in brackets, to avoid its being counted twice in our total.

[36] Because the population of Chila is given together with that of "Matlatlan"; we have separate data for each pueblo.

[36a] Because we have separe figures for Huauchinango; Ocelotepec is not part of Totonacapan.

[37] Because we prefer to consider the population of Hueytlalpan, together with "Esamayeco" and Zongozotla. For the latter, one source gives a separate figure (No. 71), but for "Esamayeco" we have no data except in combination with Hueytlalpan.

[38] Because the estimate excludes children.

[39] Because the estimate far exceeds that given by other sources. The Suma (No. 798) gives 534 tributaries, in *ca.* 1550. The Epistolario (14:78) and López de Velasco (p. 218) give 800 and 700 respectively, for *ca.* 1570 and 1571. Yet, in 1560, the Epistolario (9:19) credits Jojupango with 2,600 tributaries.

[40] Because the population of Jojupango and "Tonatico" is lumped, whereas we have separate information for each pueblo.

[41] Because the population of Pahuatlán here appears together with that of Acaxochitlán (No. 72); we have separate estimates for both pueblos.

[42] Tlaculiotepec is included with Pápalo, and for each pueblo we have independent estimates.

[43] Because the estimate is at variance with those of other sources. In 1560, the Epistolario (9:19) credits "Tonatico" with 600 tributaries. A decade earlier, the Suma (No. 529) allows only 236; and a decade later, the Epistolario (14:76–77) gives 100.

*Footnotes to table 14*—Continued

*Column H*

Figures within brackets have not been counted in the total at the foot of the column, for the following reasons:

[44] See footnote 24.
[45] See footnote 27.
[46] See footnote 28.
[47] See footnote 29.
[48] See footnote 30.
[49] See footnote 31.
[50] See footnote 32.
[51] See footnote 33.
[52] See footnote 34.
[53] See footnote 35.
[54] See footnote 36.
[54a] See footnote 36a.
[55] See footnote 37.
[56] See footnote 40.
[57] See footnote 41.
[58] See footnote 42.
[59] Because the population has been included with that of Hueytlalpan (No. 43); moreover, the source excludes children.

*Column I*

[60] The presence of Totonac and Mexicano is discussed in the text (pp. 6–7, 20).
[61] Mota y Escobar states explicitly that of the three pueblos, Atzalan alone is of Totonac speech.
[62] Both Totonac and Mexicano are reported, with the latter dominant, despite the fact that the pueblo is situated in the heart of Totonacapan. The Relación de Jojupango, on the contrary, reports only Totonac.
[63] This source alone reports Totonac speech in Jalacingo. We have not questioned the datum, since other pueblos, in the immediate vicinity, are Totonac.
[64] Only two sources mention Totonac speech in Jalapa. Ponce (1:186–187) states that Mexicano is spoken in the pueblo, Totonac in the outlying territory. Nevertheless, there is evidence of *caciques* of Totonac speech in Jalapa itself (AGN, No. 1).
[65] The source does not state in which pueblos each of the languages is spoken.
[66] The sources are contradictory; however, the statement of Mota y Escobar is based on first-hand observation.
[66a] See footnote 14.

*Column J*

[67] Source not indicated by CS.

TABLE 15.—*Language and population in modern Totonacapan*[1]

| Key No., map 2 | Municipal unit | Total population | Native speech | | | | | | | | | | | | Other languages and all children under 5 years[2] | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totonac | | | | Tepehua | | Mexicano | | Otomí | | Huastec | | | |
| | | | Monolinguals | Bilinguals | Total | Percent | Total | Percent | Total | Percent | Total | Percent | Total | Percent | Total | Percent |
| | VERACRUZ | | | | | | | | | | | | | | | |
| 1 | Tantoyuca | 29,480 | | | | | | | 2,708 | 9 | 12 | | 14,230 | 48 | 12,530 | 43 |
| 2 | Ixcatepec | 5,453 | | | | | | | 4,470 | 82 | | | 3 | | 980 | 18 |
| 3 | Tancoco | 3,700 | | | | | | | 169 | 5 | 7 | | 2,203 | 60 | 1,321 | 36 |
| 4 | Amatlantepetl | 7,157 | | 2 | 2 | | | | 89 | 1 | 1 | | 1,293 | 18 | 5,772 | 81 |
| 5 | Tamiahua | 14,463 | | 1 | 1 | | | | 514 | 4 | 1 | | 870 | 6 | 13,077 | 90 |
| 6 | Tepetzintla | 9,366 | | | | | | | 3,546 | 38 | | | 37 | | 5,783 | 62 |
| 7 | Chicontepec | 23,955 | | | | | | | 17,028 | 71 | 3 | | 2 | | 6,922 | 29 |
| 8 | Temapache | 22,633 | | 4 | 4 | | | | 3,254 | 14 | 173 | | 24 | | 19,178 | 85 |
| 9 | Benito Juárez | 6,109 | | | | | | | 4,560 | 75 | | | | | 1,549 | 25 |
| 10 | Ixhuatlán de Madero | 22,242 | 443 | 208 | 651 | 3 | 1,563 | 7 | 9,639 | 43 | 3,516 | 16 | | | 6,873 | 31 |
| 11 | Teayo | 3,353 | 3 | 8 | 11 | | | | 254 | 8 | 70 | 2 | | | 3,018 | 90 |
| 12 | Tuxpan | 31,539 | 46 | 94 | 140 | | 1 | | 267 | 1 | 24 | | 89 | | 31,018 | 98 |
| 13 | Ilamatlán | 8,217 | | | | | | | 5,563 | 68 | | | | | 2,654 | 32 |
| 14 | Zontecomatlán | 6,298 | | | | | 306 | 5 | 2,759 | 44 | 1,140 | 18 | | | 2,093 | 33 |
| 15 | Texcatepec | 3,911 | | | | | | | | | 2,712 | 69 | | | 1,199 | 31 |
| 16 | Tlachichilco | 6,625 | | | | | 865 | 13 | 576 | 9 | 908 | 14 | | | 4,276 | 64 |
| 17 | Huayacocotla | 12,464 | | | | | | | 59 | | 166 | 1 | | | 12,239 | 98 |
| 18 | Zacualpan | 7,255 | | | | | | | | | 531 | 7 | | | 6,724 | 93 |
| 19 | Tihuatlán | 9,514 | 802 | 578 | 1,380 | 15 | | | 84 | 1 | 73 | 1 | 5 | | 7,972 | 84 |
| 20 | Cazones | 6,463 | 513 | 1,115 | 1,628 | 25 | | | 49 | 1 | 14 | | 9 | | 4,763 | 74 |
| 21 | Coatzintla | 13,479 | 474 | 791 | 1,265 | 9 | | | 30 | | 7 | | 2 | | 12,175 | 90 |
| 22 | Papantla | 34,257 | 10,774 | 6,948 | 17,722 | 52 | | | 147 | | 8 | | 1 | | 16,379 | 48 |
| 23 | Gutiérrez Zamora | 10,433 | 123 | 580 | 703 | 7 | | | 84 | 1 | 3 | | | | 9,643 | 92 |
| 24 | Tecolutla | 4,602 | 221 | 1,597 | 1,818 | 40 | | | 5 | | 2 | | | | 2,777 | 60 |
| 25 | Coahuitlán | 2,127 | 1,078 | 325 | 1,403 | 66 | | | 111 | 5 | | | | | 613 | 29 |
| 26 | Coyutla | 5,647 | 2,568 | 629 | 3,197 | 57 | | | 51 | 1 | 1 | | | | 2,398 | 42 |
| 27 | Espinal | 4,643 | 689 | 742 | 1,431 | 31 | | | 124 | 3 | 1 | | | | 3,087 | 66 |
| 28 | Mecatlán | 2,416 | 1,429 | 81 | 1,510 | 63 | | | 1 | | | | | | 905 | 37 |
| 29 | Chumatlán | 1,387 | 452 | 689 | 1,141 | 82 | | | | | | | | | 246 | 18 |
| 30 | Filomeno Mata | 2,491 | 1,992 | 70 | 2,062 | 83 | | | | | | | | | 429 | 17 |
| 31 | Coxquihui | 5,265 | 2,432 | 888 | 3,320 | 63 | | | 40 | 1 | 4 | | | | 1,901 | 36 |
| 32 | Zozocolco | 5,325 | 2,434 | 650 | 3,084 | 58 | | | 110 | 2 | | | | | 2,131 | 40 |
| 33 | Martínez de la Torre | 12,597 | | 176 | 176 | 1 | | | 133 | 1 | 20 | | | | 12,268 | 97 |
| 34 | Nautla | 4,940 | | | | | | | 4 | | | | | | 4,936 | 100 |
| 35 | Tlapacoyan | 7,725 | | 2 | 2 | | | | 24 | | | | | | 7,699 | 100 |
| 36 | Atzalan | 18,611 | | | | | | | 20 | | 1 | | | | 18,590 | 100 |
| 37 | Misantla | 14,764 | 32 | 305 | 337 | 2 | | | 22 | | 1 | | | | 14,404 | 98 |
| 38 | Colipa | 3,086 | | | | | | | | | | | | | 3,086 | 100 |
| 39 | Vega de Alatorre | 5,277 | | | | | | | 1 | | 8 | | | | 5,268 | 100 |
| 40 | Jalacingo | 11,289 | | | | | | | 114 | 1 | 1 | | | | 11,174 | 99 |
| 41 | Altotonga | 19,779 | | | | | | | 1,697 | 9 | 2 | | | | 18,080 | 91 |
| 42 | Tenochitlán | 2,877 | | | | | | | 1 | | | | | | 2,876 | 100 |
| 43 | Yecuatla | 4,923 | 132 | 416 | 548 | 11 | | | | | | | | | 4,375 | 89 |
| 44 | Juchique de Ferrer | 6,183 | | 2 | 2 | | | | 14 | | | | | | 6,167 | 100 |
| 45 | Minas, Las | 2,377 | | | | | | | 123 | 5 | | | | | 2,254 | 95 |
| 46 | Tatatila | 3,127 | | | | | | | | | | | | | 3,127 | 100 |
| 47 | Tlacolulan | 4,999 | | 14 | 14 | | | | 3 | | | | | | 4,982 | 100 |
| 48 | Tonayán | 2,776 | | 43 | 43 | 2 | | | 610 | 68 | | | | | 2,733 | 98 |
| 49 | Landero y Cos | 901 | | | | | | | 1 | | | | | | 291 | 32 |
| 50 | Chiconquiaco | 5,121 | 33 | 311 | 344 | 7 | | | | | | | | | 4,776 | 93 |
| 51 | Alto Lucero | 13,067 | | | | | | | 24 | 1 | | | | | 13,067 | 100 |
| 52 | Villa Aldama | 2,327 | | | | | | | | | | | | | 2,303 | 99 |
| 53 | Vigas, Las | 5,221 | | | | | | | | | | | | | 5,221 | 100 |
| 54 | Rafael Lucio | 1,207 | | | | | | | | | | | | | 1,207 | 100 |
| 55 | Coacoatzintla | 2,191 | | 196 | 196 | 9 | | | 5 | | | | | | 1,990 | 91 |
| 56 | Banderilla | 2,638 | | 2 | 2 | | | | 1 | | | | | | 2,635 | 100 |
| 57 | Jilotepec | 4,112 | | 130 | 130 | 3 | | | 4 | | | | | | 3,978 | 97 |
| 58 | Naolinco | 8,325 | | 116 | 116 | 1 | | | 2 | | | | | | 8,207 | 99 |
| 59 | Miahuatlán | 1,842 | | | | | | | | | | | | | 1,842 | 100 |
| 60 | Acatlán | 1,291 | | 46 | 46 | 4 | | | | | | | | | 1,245 | 96 |
| 61 | Tepetlán | 4,272 | | | | | | | | | 1 | | | | 4,271 | 100 |
| 62 | Acajete | 3,993 | | | | | | | 1 | | | | | | 3,992 | 100 |
| 63 | Tlalnelhuayocan | 1,737 | | | | | | | 356 | 20 | | | | | 1,381 | 80 |
| 64 | Jalapa | 46,827 | | 7 | 7 | | | | 35 | | 3 | | | | 46,782 | 100 |
| 65 | Emiliano Zapata | 13,299 | | 4 | 4 | | | | 9 | | 2 | | | | 13,284 | 100 |
| 66 | Actopan | 13,701 | | | | | | | | | | | | | 13,701 | 100 |
| 67 | Coatepec | 20,855 | | | | | | | 11 | | 3 | | | | 20,841 | 100 |
| 68 | Jalcomulco | 1,990 | | | | | | | 720 | 36 | | | | | 1,270 | 64 |
| 69 | Apazapan | 2,340 | | | | | | | 5 | | | | | | 2,335 | 100 |
| 70 | Puente Nacional | 5,124 | | | | | | | 4 | | | | | | 5,120 | 100 |
| 71 | Ursulo Galván | 8,737 | | | | | | | | | | | | | 8,737 | 100 |
| 72 | Antigua, La | 5,144 | | | | | | | 2 | | 2 | | | | 5,140 | 100 |
| | Subtotal | 633,861 | 26,670 | 17,770 | 44,440 | 7 | 2,735 | | 60,237 | 10 | 9,421 | 1 | 18,768 | 3 | 498,260 | 79 |

See footnote on page 263.

TABLE 15.—*Language and population in modern Totonacapan*—Continued

| Key No., map 2 | Municipal unit | Total population | Native speech | | | | | | | | | | | | Other languages and all children under 5 years | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Totonac | | | | Tepehua | | Mexicano | | Otomí | | Huastec | | | |
| | | | Monolinguals | Bi-linguals | Total | Percent | Total | Percent | Total | Percent | Total | Percent | Total | Percent | Total | Percent |
| | PUEBLA | | | | | | | | | | | | | | | |
| 73 | Francisco Z. Mena | 6,520 | 66 | 270 | 336 | 5 | 2 | ------ | 1,080 | 17 | 422 | 6 | ------ | ------ | 4,680 | 72 |
| 74 | Pantepec | 6,345 | 1,525 | 772 | 2,297 | 36 | 91 | 1 | 1 | ------ | 823 | 13 | ------ | ------ | 3,133 | 49 |
| 75 | Jalpan | 4,809 | 412 | 565 | 977 | 20 | ------ | ------ | 24 | ------ | 230 | 5 | ------ | ------ | 3,578 | 74 |
| 76 | Tlaxco | 3,974 | 8 | 7 | 15 | ------ | ------ | ------ | 124 | 3 | 424 | 11 | ------ | ------ | 3,411 | 86 |
| 77 | Tlacuilotepec | 10,061 | 2,091 | 995 | 3,086 | 31 | ------ | ------ | 681 | 7 | 438 | 4 | ------ | ------ | 5,856 | 58 |
| 78 | Villa Juárez | 12,806 | 35 | 90 | 125 | 1 | ------ | ------ | 3,236 | 25 | 149 | 1 | ------ | ------ | 9,296 | 73 |
| 79 | Pahuatlán | 9,530 | ------ | ------ | ------ | ------ | ------ | ------ | 1,749 | 18 | 1,475 | 15 | ------ | ------ | 6,306 | 66 |
| 80 | Naupan | 4,840 | ------ | ------ | ------ | ------ | ------ | ------ | 4,030 | 83 | ------ | ------ | ------ | ------ | 810 | 17 |
| 81 | Huauchinango | 17,700 | 479 | 81 | 560 | 3 | ------ | ------ | 6,450 | 36 | 3 | ------ | ------ | ------ | 10,687 | 60 |
| 82 | Juan Galindo | 5,144 | ------ | 7 | 7 | ------ | ------ | ------ | 849 | 17 | 6 | ------ | ------ | ------ | 4,282 | 83 |
| 83 | Zihuateutla | 3,099 | 310 | 409 | 719 | 23 | ------ | ------ | 946 | 31 | 2 | ------ | ------ | ------ | 1,432 | 46 |
| 84 | Tlaola | 8,104 | 24 | ------ | 24 | ------ | ------ | ------ | 4,890 | 60 | ------ | ------ | ------ | ------ | 3,190 | 39 |
| 85 | Jopala | 5,323 | 1,587 | 1,162 | 2,749 | 52 | ------ | ------ | 655 | 12 | ------ | ------ | ------ | ------ | 1,919 | 36 |
| 86 | Chiconcuautla | 7,343 | 1 | 1 | 2 | ------ | ------ | ------ | 4,821 | 66 | 3 | ------ | ------ | ------ | 2,517 | 34 |
| 87 | Tlapacoyan | 3,178 | ------ | ------ | ------ | ------ | ------ | ------ | 2,530 | 80 | 1 | ------ | ------ | ------ | 647 | 20 |
| 88 | San Felipe Tepatlán | 2,166 | 1,457 | 264 | 1,721 | 79 | ------ | ------ | 41 | 2 | ------ | ------ | ------ | ------ | 404 | 19 |
| 89 | Hermenegildo Galeana | 2,369 | 1,135 | 336 | 1,471 | 62 | ------ | ------ | 135 | 6 | ------ | ------ | ------ | ------ | 763 | 32 |
| 90 | Olintla | 6,947 | 5,019 | 581 | 5,600 | 81 | ------ | ------ | 1 | ------ | ------ | ------ | ------ | ------ | 1,346 | 19 |
| 91 | Zacatlán | 25,860 | ------ | 1 | 1 | ------ | ------ | ------ | 5,062 | 20 | ------ | ------ | ------ | ------ | 20,797 | 80 |
| 92 | Ahuacatlán | 6,451 | 2,135 | 42 | 2,177 | 34 | ------ | ------ | 2,702 | 42 | ------ | ------ | ------ | ------ | 1,572 | 24 |
| 93 | Tepango de Rodríguez | 1,892 | 1,241 | 289 | 1,530 | 81 | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 362 | 19 |
| 94 | Amixtlán | 2,551 | 1,426 | 377 | 1,803 | 71 | ------ | ------ | 19 | 1 | ------ | ------ | ------ | ------ | 729 | 29 |
| 95 | Coatepec | 978 | 666 | 129 | 795 | 81 | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 183 | 19 |
| 96 | Huehuetla | 7,815 | 3,902 | 2,052 | 5,954 | 76 | ------ | ------ | 114 | 1 | ------ | ------ | ------ | ------ | 1,747 | 22 |
| 97 | Tuzamapan de Galeana | 3,225 | 579 | 1,106 | 1,685 | 52 | ------ | ------ | 631 | 20 | ------ | ------ | ------ | ------ | 909 | 28 |
| 98 | Tepetzintla | 4,557 | 313 | 1 | 314 | 7 | ------ | ------ | 3,498 | 77 | ------ | ------ | ------ | ------ | 745 | 16 |
| 99 | Zongozotla | 1,489 | 1,065 | 229 | 1,294 | 87 | ------ | ------ | 26 | 2 | ------ | ------ | ------ | ------ | 169 | 11 |
| 100 | Camocuautla | 1,322 | 974 | 155 | 1,129 | 85 | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 193 | 15 |
| 101 | Hueytlalpan | 5,488 | 3,126 | 943 | 4,069 | 74 | ------ | ------ | 178 | 3 | ------ | ------ | ------ | ------ | 1,241 | 23 |
| 102 | Ignacio Allende | 1,675 | 1,398 | 74 | 1,472 | 88 | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 203 | 12 |
| 103 | Jonotla | 2,928 | 390 | 443 | 833 | 28 | ------ | ------ | 1,008 | 34 | ------ | ------ | ------ | ------ | 1,087 | 37 |
| 104 | Tenampulco | 2,589 | ------ | 392 | 392 | 15 | ------ | ------ | 69 | 5 | ------ | ------ | ------ | ------ | 2,128 | 82 |
| 105 | Chignahuapan | 17,195 | ------ | ------ | ------ | ------ | ------ | ------ | 3 | ------ | ------ | ------ | ------ | ------ | 17,192 | 100 |
| 106 | Aquixtla | 6,652 | ------ | ------ | ------ | ------ | ------ | ------ | 139 | 2 | ------ | ------ | ------ | ------ | 6,513 | 98 |
| 107 | Tetela de Ocampo | 15,882 | 1 | 4 | 5 | ------ | ------ | ------ | 4,009 | 25 | ------ | ------ | ------ | ------ | 11,868 | 75 |
| 108 | Cuautempan | 4,437 | ------ | ------ | ------ | ------ | ------ | ------ | 2,744 | 62 | ------ | ------ | ------ | ------ | 1,693 | 38 |
| 109 | Huitzilan | 5,031 | ------ | 1 | 1 | ------ | ------ | ------ | 4,319 | 86 | ------ | ------ | ------ | ------ | 711 | 14 |
| 110 | Zapotitlán de Méndez | 2,946 | 1,409 | 800 | 2,209 | 75 | ------ | ------ | 30 | 1 | ------ | ------ | ------ | ------ | 707 | 24 |
| 111 | Xochitlán | 5,788 | ------ | ------ | ------ | ------ | ------ | ------ | 4,506 | 78 | ------ | ------ | ------ | ------ | 1,282 | 22 |
| 112 | Zoquiapan | 1,636 | ------ | ------ | ------ | ------ | ------ | ------ | 1,399 | 86 | ------ | ------ | ------ | ------ | 237 | 14 |
| 113 | Nauzontla | 2,842 | ------ | ------ | ------ | ------ | ------ | ------ | 919 | 32 | ------ | ------ | ------ | ------ | 1,923 | 68 |
| 114 | Cuetzalán del Progreso | 21,270 | ------ | ------ | ------ | ------ | ------ | ------ | 8,698 | 41 | ------ | ------ | ------ | ------ | 12,572 | 59 |
| 115 | Ayotoxco de Guerrero | 1,232 | ------ | ------ | ------ | ------ | ------ | ------ | 679 | 55 | ------ | ------ | ------ | ------ | 553 | 45 |
| 116 | Hueytamalco | 5,951 | 51 | 496 | 547 | 9 | ------ | ------ | 379 | 6 | 1 | ------ | ------ | ------ | 5,024 | 84 |
| 117 | Acateno | 3,659 | ------ | 2 | 2 | ------ | ------ | ------ | 54 | 1 | ------ | ------ | ------ | ------ | 3,603 | 98 |
| 118 | Xochiapulco | 3,066 | ------ | 7 | 7 | ------ | ------ | ------ | 2,303 | 75 | ------ | ------ | ------ | ------ | 756 | 25 |
| 119 | Zacapoaxtla | 15,725 | ------ | 11 | 11 | ------ | ------ | ------ | 9,868 | 63 | ------ | ------ | ------ | ------ | 5,846 | 37 |
| 120 | Yaonáhuac | 2,324 | ------ | ------ | ------ | ------ | ------ | ------ | 1,863 | 80 | ------ | ------ | ------ | ------ | 461 | 20 |
| 121 | Hueyapan | 2,600 | ------ | ------ | ------ | ------ | ------ | ------ | 2,172 | 84 | ------ | ------ | ------ | ------ | 428 | 16 |
| 122 | Ixtacamaxtitlán | 17,487 | ------ | ------ | ------ | ------ | ------ | ------ | 1,912 | 11 | 1 | ------ | ------ | ------ | 15,574 | 89 |
| 123 | Zautla [2] | 5,086 | ------ | ------ | ------ | ------ | ------ | ------ | 3,307 | 65 | ------ | ------ | ------ | ------ | 1,779 | 35 |
| 124 | Zaragoza | 2,505 | ------ | ------ | ------ | ------ | ------ | ------ | 128 | 5 | ------ | ------ | ------ | ------ | 2,377 | 95 |
| 125 | Tlatlauquitepec | 14,695 | ------ | 1 | 1 | ------ | ------ | ------ | 4,710 | 32 | ------ | ------ | ------ | ------ | 9,984 | 68 |
| 126 | Teteles | 849 | ------ | ------ | ------ | ------ | ------ | ------ | 152 | 18 | ------ | ------ | ------ | ------ | 697 | 82 |
| 127 | Atempan | 3,694 | ------ | ------ | ------ | ------ | ------ | ------ | 1,980 | 54 | ------ | ------ | ------ | ------ | 1,714 | 46 |
| 128 | Teziutlán | 17,296 | ------ | 2 | 2 | ------ | ------ | ------ | 2,133 | 12 | 2 | ------ | ------ | ------ | 15,159 | 88 |
| 129 | Chignautla | 4,346 | ------ | ------ | ------ | ------ | ------ | ------ | 3,661 | 84 | ------ | ------ | ------ | ------ | 685 | 16 |
| 130 | Xiutetelco | 6,731 | ------ | ------ | ------ | ------ | ------ | ------ | 964 | 14 | ------ | ------ | ------ | ------ | 5,767 | 86 |
| 131 | Cuyoaco | 5,174 | ------ | ------ | ------ | ------ | ------ | ------ | 145 | 3 | 1 | ------ | ------ | ------ | 5,028 | 97 |
| | Subtotal [1] | 385,177 | 32,825 | 13,097 | 45,922 | 12 | 93 | ------ | 108,726 | 28 | 3,981 | 1 | ------ | ------ | 226,455 | 59 |
| | HIDALGO | | | | | | | | | | | | | | | |
| 132 | Huautla | 15,932 | ------ | ------ | ------ | ------ | ------ | ------ | 12,131 | 76 | ------ | ------ | 1 | ------ | 3,800 | 24 |
| 133 | Yahualica | 9,219 | ------ | ------ | ------ | ------ | ------ | ------ | 6,926 | 75 | ------ | ------ | ------ | ------ | 2,293 | 25 |
| 134 | Xochiatipan | 6,813 | ------ | ------ | ------ | ------ | ------ | ------ | 4,982 | 73 | ------ | ------ | ------ | ------ | 1,831 | 27 |
| 135 | Tianguistengo | 14,135 | ------ | 1 | 1 | ------ | ------ | ------ | 6,409 | 45 | ------ | ------ | ------ | ------ | 7,725 | 55 |
| 136 | Zacualtipán | 10,150 | ------ | ------ | ------ | ------ | ------ | ------ | 1,463 | 14 | ------ | ------ | ------ | ------ | 8,687 | 86 |
| 137 | Metzquititlán | 7,248 | ------ | ------ | ------ | ------ | ------ | ------ | 288 | 4 | 10 | ------ | ------ | ------ | 6,950 | 96 |
| 138 | Metepec | 4,713 | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 6 | ------ | ------ | ------ | 4,707 | 100 |
| 139 | Agua Blanca Iturbide | 5,509 | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 81 | 1 | ------ | ------ | 5,428 | 99 |
| 140 | San Bartolo Tutotepec | 14,046 | ------ | ------ | ------ | ------ | ------ | ------ | 472 | 3 | 6,349 | 45 | ------ | ------ | 7,225 | 51 |
| 141 | Huehuetla | 11,086 | 11 | 4 | 15 | ------ | 1,067 | 10 | 29 | ------ | 5,689 | 51 | ------ | ------ | 4,286 | 39 |
| 142 | Tenango de Doria | 8,391 | ------ | ------ | ------ | ------ | ------ | ------ | ------ | ------ | 2,877 | 34 | ------ | ------ | 5,514 | 66 |
| | Subtotal [1] | 107,242 | 11 | 5 | 16 | ------ | 1,067 | 1 | 32,700 | 30 | 15,012 | 14 | 1 | ------ | 58,446 | 54 |
| | Total [1] | 1,126,280 | 59,506 | 30,872 | 90,378 | 8 | 3,895 | ------ | 201,663 | 18 | 28,414 | 3 | 18,769 | 2 | 783,161 | 70 |

See footnotes on page 263.

*Footnote to table 15*

[1] This table shows the distribution of language and population in modern Totonacapan and environs. It is based on the 1940 data on file in the archives of the Federal census office, where the original material is recorded person by person, and community by community. However, in the table, grouping is by municipal unit. Publication of the data for each community would require many pages. Moreover, to have language distribution meaningful, it must be presented graphically (see map 2), yet it is quite impossible to locate all individual settlements within a municipal unit. No available map is sufficiently large-scale to show the smaller communities. Moreover, villages may spring up like mushrooms, only to be abandoned within a few years. In short, for practical reasons, we have chosen the larger, more stable, and easily identified municipal units. To be sure, this results in a less accurate picture, for it does not reveal the internal distribution of language and population. For example, it clouds the fact that in Huauchinango (No. 81), Totonac speech is effectively confined to two settlements and is not generally distributed throughout the municipal unit.

For each municipal unit, the table gives the incidence of Totonac, Tepehua, Mexicano, Otomí, and Huastec speech. We have considered Totonac the language which the census taker in Chapultepec (one settlement of Coaccatzintla, No. 55) has designated as "Zempoalteco." Native languages other than those just mentioned scarcely occur, and such isolated elements are included in the penultimate column. The latter also includes Spanish; a negligible ingredient of other Indo-European languages, chiefly French; and all children under 5 years of age, irrespective of speech.

In other words, the penultimate column gives merely the residue, once the occurrence of Totonac, Tepehua, Mexicano, Otomi, and Huastec speech has been deducted. Figures in this column are not based on an actual count of the census records. They have been derived by subtracting from the total population, as given in the 1940 published census, the combined incidence of the 5 native languages mentioned above.

In some communities, native-language monolinguals demonstrably are excessive, simply because the census taker has neglected to indicate the presence of Spanish speech. In these instances, we have calculated bilinguals on the basis of schooling and literacy. For example, if an individual has attended school several years or if he is credited with knowledge of reading and writing, it may be assumed that he controls Spanish, as well as his native language.

Only for the Totonac does our table distinguish between monolinguals and bilinguals, that is, Totonac-Spanish bilinguals. Entries under other languages include both monolinguals and persons who speak Spanish, in addition to a native language. Thus Mexicano monolinguals and Mexicano-Spanish bilinguals both appear in the tables as Mexicano. This is the reverse of the procedure followed in the published census, which recognizes only monolinguals as of native speech.

We find an expectable overlap in language. There are some Totonac-Mexicano bilinguals, as well as Totonac-Mexicano-Spanish trilinguals. Moreover, there are Mexicano-Otomí and Mexicano-Huastec bilinguals. We found no mention of Totonac-Otomí, Totonac-Huastec, or Otomí-Huastec bilinguals, nor did we find Tepehua combined with another native language.

In the table, native-language polyglots have been credited with each language concerned. Accordingly, a Totonac-Mexicano bilingual has been counted once as a Totonac (one who speaks no Spanish) and once as a Mexicano. A Totonac-Mexicano-Spanish trilingual is entered as a Totonac-Spanish bilingual and also as a Mexicano. In all such cases of overlap, the residue, shown in the penultimate column of the table, is not entirely accurate; it lacks the number of individuals who have been duplicated in the entries under native languages. As will be seen below, such duplication is numerically insignificant.

The whereabouts of native-language bilinguals should be of importance to anyone who contemplates linguistic work in the zone covered by the table. Accordingly, below, we give the specific occurrence of such accomplished individuals. Language is abbreviated thus: T, Totonac; M, Mexicano; O, Otomí; H, Huastec; S, Spanish (the latter specified only for those who likewise speak Totonac). The municipal unit is identified by number, to agree with the table, and the settlement within it is given by name.

*Veracruz.* 1. Tantoyuca, 7 M–H; Buena Vista (Chial Pérez), 1 M–H. 3. Teteco, 2 M–H. 4. Amatlantepetl, 5 M–H. 5. El Cafetal, 2 M–H. 17. Huayacocotla, 3 M–O. 21. Poza Rica, 1 T–M–S. 22. Jolcapan, 1 T–M–S; Pajasco, 1 T–M–S; Paso de Correo, 2 T–M–S; Primero de Mayo, 2 T–M–S; Pueblillo, 4 T–M, 4 T–M–S. 27. Espinal, 1 T–M–S; El Pacífico, 1 T–M–S.

*Puebla.* 77. Palo Blanco, 1 T–M. 78. Villa Juárez, 1 T–M–S; San Agustín, 14 T–M, 4 T–M–S. 82. Necaxa, 1 T–M–S. 83. Ocomantla, 1 T–M; La Unión, 1 T–M–S. 86. Chiconcuautla, 1 T–M, 1 T–M–S. 92. Ahuacatlán, 1 T–M–S. 98. San Pedro, 1 T–M–S. 101. Ixtepec, 2 T–M–S; Zitlala, 2 T–M–S. 103. Jonotla, 6 T–M–S. 107. Taxco, 1 T–M; Tequiquilco, 1 T–M–S. 116. Tenexapa de Azueta, 1 T–M–S; Tepetitán, 2 T–M–S. 118. Cinco de Mayo, 4 T–M–S. 119. Zacapoaxtla, 1 T–M–S.

*Hidalgo.* No native-language bilinguals noted.

In addition to incidence, the table gives percent ratio, with the latter figures in italics. When less than 1 percent is involved, incidence is shown but percent ratio has been disregarded. An entry in italics opposite a subtotal or total indicates percent ratio calculated on the basis of subtotal or total population. Thus, the 72 municipal units in the State of Veracruz have a total population of 633,861. Of this figure, 44,440 persons, or 7 percent, speak Totonac. Similarly, the 142 municipal units in Veracruz, Puebla, and Hidalgo have a total population of 1,126,280; of this number, 90,378, or 8 percent, are of Totonac speech.

For some municipal units, the original records are incomplete. If the number of missing entries is negligible, no note is made here; but, in some cases, the data are so faulty that the picture may be altered somewhat. Such instances are listed below. Again, the municipal unit is identified by number, to agree with the table, while the individual settlement is entered by name.

*Veracruz.* 10. Cruz Blanca: page torn, ca. 30 entries missing; Tecalco: page torn, ca. 17 entries missing. 20. La Piedad: page torn, ca. 30 entries missing. 22. Morgadal: page torn, 11 entries missing; Poza Verde: entire sheet missing, with possibly 65 entries.

*Puebla.* 123. Record for half the settlements of the municipal unit of Zautla missing. The entry on the table is based on 8 settlements, with a total of 5,086 inhabitants; actually, the municipal unit consists of 17, with a total of 10,814 individuals. 125. Ocotla: entire page missing, with possibly 65 entries.

## APPENDIX B

# THE MEXICAN CONQUESTS

The account below is a summary of the conquests made by the ancient Mexicans, with special reference to Totonacapan and adjacent areas. There is a great wealth of source material concerning the military history of the Mexica, but it has been little exploited. Barlow (1947 a) recently has published a very useful summary, but with so little detail that, for our purpose, it was advisable to consult the original sources. This has resulted in a protracted and time-consuming study, and in the hope that other investigators may be spared the necessity of repeating the ordeal, we include herewith a general account of the Mexican conquests. Naturally, emphasis has been placed on the Gulf coast, which is of most interest to us. However, the maps indicate the full range of the conquests during the reign of each Mexican ruler; and authorities have been cited extensively, so that anyone who is interested may be able to locate the pertinent material without having to struggle with the entire body of raw data.

Our summary is based on the following sources:

*a.* Three key lists of the pueblos conquered by each Mexican ruler, to be found in the Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza. Nazareo has a similar list, apparently taken directly from the Códice Chimalpopoca, but his variant spellings occasionally assist in the identification of towns.

These lists give no internal chronology, other than that which possibly is implied by the order in which the towns appear. However, in other passages, both the Códice Chimalpopoca and the Anales de Tlatelolco have specific dates for a limited number of conquests, and these make it evident that the lists seldom are in chronological order. Generally, however, the pueblos are grouped roughly by province.

*b.* Additional listing of towns by districts is found in the so-called Matrícula de tributos, of the Colección de Mendoza. This enumerates the towns subject to Moctezuma II; there is, however, no clue to the chronology of conquests, and the pueblos subjugated by him and his predecessors are lumped. However, the grouping is geographical and therefore is of very considerable assistance in identifying conquered pueblos. The Matrícula manifestly is incomplete. To cite only one case, we know from Spanish sources that Moctezuma was extracting tribute from the Totonac pueblo of "Cempoala" in the early sixteenth century; yet the only town of that name in the Matrícula obviously is the Zempoala of modern Hidalgo.

*c.* Two authorities, the Codex Telleriano-Remensis and the Historia de los mexicanos por sus pinturas, give a limited number of conquests, with specific dates, but no full list of the vanquished pueblos.

*d.* Moreover, Tezozomoc (as well as Durán and the Códice Ramírez) and Torquemada provide running descriptions of the conquests, presumably in chronological order. With one exception, Tezozomoc cannot be interpreted in terms of precise years; but from time to time, Torquemada indicates during which year of the reign a certain event took place, and from these key points, a chronology of sorts can be extracted. Veytia we have not used extensively; in large part, his data on conquests seem to be drawn from Torquemada.

*e.* Collateral evidence concerning Mexican conquests comes from two Texcocan sources, the Códice en Cruz and Ixtlilxochitl, which give dates for some of the more important events in the history of Mexico-Tenochtitlan.

We have used only the more obvious records which are available in Spanish. But a person who controls Nahuatl and who has unlimited time at his disposition undoubtedly could draw on a much larger series of source material.

Before we turn to a discussion of the conquests, we may say that the more we work with these ancient records, the more impressed we are with their apparent reliability. By and large, there is a very gratifying agreement between the several accounts—an agreement which undoubtedly is owing in part to the fact that some of the sources are drawn from the same older picture codices. That is to say, we cannot asume that our several sources are entirely independent of one another. But as partial compensation, our records are not all from Mexico-Tenochtitlan. The sister city of Mexico-Tlatelolco is represented; the Códice Chimalpopoca is from the once important town of Cuautitlán, north of Mexico City; and two Texcocan sources are included. In any case, the major outlines seem pretty clear, and often there is surprising accordance even in detail. Some accounts

are relatively full; some have manifest lacunae; some are biased. By pooling all, we feel that a reasonably reliable record results.

There are expectable differences in dates, since the events took place decades before the Spanish Conquest. Furthermore, even these may diminish appreciably, once Kirchhoff publishes his recent findings concerning calendar reckonings among the different pueblos in the vicinity of the Valley of Mexico. Conquests and wars for which the sources give dates, appear in tabular form, and when Kirchhoff's scheme is available, the indicated corrections can be made quite easily.

The great era of Mexican expansion began in the times of Moctezuma I and terminated with the arrival of the Spaniards during the reign of his namesake, the younger Moctezuma. In the course of this relatively short time span, from 1440 to 1520, the Mexica and their allies overran much of Mexico and even extended their conquests as far south as modern Guatemala.

We are not sure that the data warrant the use of "conquest" in our sense of the word; in many cases, raid for booty would be more accurate. A pueblo was defeated; tribute was exacted and presumably was to be continued indefinitely. But the frequency with which the same town was subdued again and again certainly indicates little integration and consolidation of gains.

Nevertheless, at least in later times, there is evidence of an extraordinarily efficient organization in many conquered areas. Mexican mayordomos were installed; there were garrisons at key points; and in some of the devastated districts, colonists from the Valley of Mexico were imported (Tezozomoc, pp. 349–350). Moreover, the professional traveling merchants functioned as effective spies, and not infrequently their arrival in a "foreign" zone was the harbinger of conquest.

## EARLY CONQUESTS

The Mexicans who, as new settlers, wandered into the Valley of Mexico did not fare well at first, and it was a good many years before they were sufficiently established to embark on any program of expansion.

At the start, they were subject to Culhuacán, but eventually they moved from the lands of that pueblo and settled the site of Tenochtitlan, in the lake. There they lived in relative isolation, no longer subject to Culhuacán, but now tributary to the great Tepanecan center of Azcapotzalco (Torquemada 1: 89, 97).

During the second half of the fourteenth century (the dates vary considerably in different sources), they selected as their leader, one Acamapichtli. Following his death, Huitzilihuitl became ruler and he, in turn, was followed by Chimalpopoca.

Several military victories are claimed for the Mexicans under these early leaders—but the Tenochca still were tributaries of Azcapotzalco, and the campaigns presumably are to be regarded as Tepanecan enterprises, in which the Mexicans, as vassals, participated. The majority of these early conquests were centered in the environs of the Valley of Mexico. But upon occasion, Azcapotzalco campaigns took the warriors of Tenochtitlan far from home base. Under Acamapichtli, they reached Cuautinchán, in modern Puebla (map 10, No. 1).[30] Under Huitzilihuitl, they journeyed to Tulancingo, in modern Hidalgo, and again, to Cuautinchán (map 11, Nos. 8, 14). During the era of Chimalpopoca, the Mexican warriors headed once more for Tulancingo, and apparently reached Orizaba (map 12, Nos. 7, 10, respectively). The conquest of these three pueblos is discussed in the notes to maps 10 to 12.

## ITZCOATL (1427–40) [31]

Tepanecan rule became oppressive and led to the death of Chimalpopoca, concerning which there are various versions. He was succeeded by Itzcoatl, under whose rule the heretofore obscure Tenochtitlan emerged as a local power.

Mexico was rid of the Tepanecan yoke, as was Texcoco, and in 1431 (Códice Chimalpopoca, p. 48; Códice en Cruz, pp. 29–30) the legitimate Texcocan ruler, Netzahualcoyotl, was restored to power. Not only was Azcapotzalco destroyed, but other local Tepanecan pueblos were liquidated. Prudently, the ruler of Tepanecan Tacuba either had not participated in the conflict, or had offered

[30] Maps 10 to 18, showing Mexican conquests, will be found at the end of this appendix.

[31] Dates assigned the reign of Itzcoatl vary. Different sources start it in 1424, 1426, 1427, and 1428; we have followed the Colección de Mendoza (5: 44–45), which gives 1427. One source terminates his rule in 1439, but most agree that it ended in 1440. However, Durán (1: 123) mentions a version which would have Itzcoatl live until 1445.

only passive resistance, hence the victors proclaimed him the legal heir to the remnants of the Tepanecan realm.

With the restoration of Netzahualcoyotl in Texcoco, and with the recognition of Tacuba as heir of the now demised Azcapotzalco, the famous Triple Alliance came into being (Ixtlilxochitl 2:153–154; Torquemada 1:146). According to the agreement, the three powers—Tenochtitlan, Texcoco, and Tacuba—collaborated in war, and the spoils were divided in five parts, of which two went each to Tenochtitlan and Texcoco, and the remaining fifth, to Tacuba.

In the course of time (table 16), this military organization was felt over a great part of Mexico. Even in the days of Itzcoatl, campaigns were by no means confined to the Valley of Mexico. By the end of his rule, subject pueblos extended north to Tula (map 13, No. 22), in modern Hidalgo; east to Totimehuacán (map 13, No. 27), in Puebla; and south, into Morelos and on to Guerrero, where a number of important centers came under the control of the Triple Alliance. To the west, there were few conquests, a situation which held likewise for the succeeding reign, that of the elder Moctezuma.

TABLE 16.—*The dated wars of Itzcoatl (1427–40)*[a]

| Key No., map 13 | Pueblo | Códice Chimalpopoca | Anales de Tlatelolco | Historia de los mexicanos por sus pinturas | Ixtlilxochitl |
|---|---|---|---|---|---|
| 1 | Coatlinchán [1] | 3 tochtli [1430] (pp. 46–48) | 2 calli [1429] (p. 55) | *año* 108 [b] [1430] (p. 230) | (2:151) 1428 |
| 2 | Huexotla [1] | | | | |
| 3 | Acolman [1] | | | | |
| 4 | Tultitlán [1] | | | | |
| 5 | Azcapotzalco [1,12] | | | | |
| 6 | Coyoacán [1,8] | | | | |
| 7 | Xochimilco [1,15,c] | | | | 1430 (2:152) |
| 8 | Tepanecas [2,7,13] | | 1 tecpatl [1428] (p. 55) | | |
| 9 | Cuernavaca [3,8] | | 6 calli [1433] (p. 55) | | |
| 10 | Jaltocán [3] | | | | 1428 (2:151) |
| 11 | Tlahuac [4,14] | 4 acatl [1431] (pp. 49, 66) | | | 1430 (2:152) |
| 12 | Texcoco [6,8] | | 3 tochtli [1430] (p. 55) | | 1430 (2:151–152) |
| 13 | Tacuba [6] | | | | 1428 (2:151) |
| 23 | Cuautitlán | | | *año* 117 [1439] (p. 230) | 1428 (2:151) |
| 26 | Matlatzincas [8,9] | | 5 tecpatl [1432] (p. 55) | | |
| 27 | Totimehuacán [8] | | 7 tochtli [1434] (p. 56) | | |
| 31 | Tlatelolco [8,10] | | | *años* 112,[b] [1434] 113 [1435] (p. 230) | |
| 35 | Churubusco | | | | 1428 (2:151) |
| 36 | Tenayucan | | | | |
| 37 | "Tepanoaya" [14] | | | | |
| 38 | Culhuacán | | | | |

[a] If the source indicates the date in the Mexican calendar, or by other local reckoning (Historia de los mexicanos por sus pinturas), it appears on the left side of the column, with the corresponding year in our calendar opposite. When the latter is based on calculation, either ours (Torquemada) or that of the editor (Códice Chimalpopoca, Anales de Tlatelolco), the date is bracketed.

In some cases, a source states definitely that a certain pueblo was conquered by the Mexicans in a given year. But in other instances, it reports war in a certain year, without identification of the aggressor, or without clear indication of the outcome. Or, it may state merely that the ruler of a certain pueblo "perished," or that the town was destroyed by "pestilence." Barlow (1947 d, p. 521) has pointed out that the latter, in the Códice Chimalpopoca, is a misleading translation from Nahuatl to Spanish and that reference actually is to Mexican conquest. In all the above instances, when other sources are confirmatory and report war with the Mexicans during the reign in question, the pueblo has been included in the table.

These doubtful cases are discussed individually in the footnotes to map 13. All numbered references in the table refer to the comments which accompany that map; lettered footnotes, concerned primarily with chronology, are appended below. Braces apply only to the columns within which they are placed.

[b] The dates given by this source (p. 230) for the wars with Azcapotzalco and Tlatelolco are somewhat ambiguous. For Azcapotzalco, the year might be interpreted either as *año* 108 or 112. We have chosen the former, which coincides roughly with the dating given by other sources; our impression is that the year 112 refers to Tlatelolco. The Colección de Mendoza also reports the conquest of Tlatelolco but does not date it.

[c] The Códice Chimalpopoca (p. 47) places the destruction of Xochimilco in the year 3 tochtli, but remarks (p. 48) that the Colhuas date it from the succeeding year, when Netzahualcoyotl was "crowned."

Mexican expansion was under way. By the year 5 tecpatl (1432), Itzcoatl "reigned in all parts and over the kings of the pueblos; it was when began, forever, the glory of the Tenochca Mexican" (Códice Chimalpopoca, p. 49).

## MOCTEZUMA I (1440–69)[32]

The great era of Mexican expansion under the elder Moctezuma started modestly, with essen-

[32] The terminal date discussed in footnote 47, p. 272.

tially local wars. Tezozomoc (pp. 74–76, 81–88) reports an initial combat with Texcoco, followed by one with "Chalco" (Tlalmanalco, map 14, No. 4; see footnote 3, map 11). Torquemada (1:151–153) begins the Mexican aggressions with "Chalco," which received intermittent pommeling until it finally was subjugated in 1465 (table 17, No. 4). With "Chalco" temporarily in hand, Moctezuma indulged in another local flurry, this with Tlatelolco (map 14, No. 50), the sister city of Tenochtitlan (Torquemada 1:157). Although its ruler was killed, Tlatelolco was not conquered until much later, in 1473, under Axayacatl (table 18, No. 3).

It seems likely that early in his career Moctezuma made inroads in modern Morelos (map 14), which logically should have preceded his aggressions in northeastern Guerrero (Torquemada 1:157); Veytia (2:213) confirms the relationship between these conquests. The incursions in Morelos are entirely innocent of dating, but the other campaigns just mentioned took place prior to 1448, the ninth year of the reign (Torquemada 1:157).

With the completion of the Guerrero conquests there was a lull, but shortly thereafter Moctezuma looked toward the Gulf of Mexico. At this time, commercial relations with the provinces of the east coast were both extensive and intensive; professional merchants from the principal pueblos of the Valley of Mexico were active in the southern Huasteca and participated in the markets held every 20 days in "Tzicoac,"[33] Temapache, and Tuxpan (map 14, Nos. 48, 79, 78) (Tezozomoc, pp. 105–106).

It is precisely these merchants who were responsible for Moctezuma's first major campaign on the coast, because, for some reason or other, the Huastecan pueblos decided to exterminate them. Tezozomoc (p. 105) suggests that the cause was "envy, ill will, or the desire to rob them." However, in view of the role generally played by Mexican merchants, as precursors of conquest (Acosta Saignes, pp. 10–11), it seems not unlikely that the real cause was the understandable desire of the Huastecans to remain free of Mexican control. In any event, there was a general massacre, through the simple expedient of pushing the victims over a cliff. Following this, the Huastecans prudently erected a series of fortifications and awaited the outcome.

Traders from Tulancingo carried the news to Moctezuma (Tezozomoc, p. 105), who notified his allies—Netzahualcoyotl, of Texcoco, and Totoquihuatzin, of Tacuba—and the machinery of the Triple Alliance went into motion. The campaign was short. Divided into small political units (M. Cuevas, 1914, p. 221), the Huastecans apparently were not organized for concerted action. On the contrary, the Mexicans were good strategists and employed the device of hiding part of their troops until a critical moment. The vanquished Huastecans then took refuge on a hill and, by means of interpreters, asked for a truce, offering generous tribute, which Tezozomoc (p. 110) lists in detail. The Mexicans and their allies returned triun-

[33] Melgarejo (n. d.), on the basis of a nineteenth-century statement, seeks to identify ancient "Tzicoac" with a modern settlement known as Dr. Montes de Oca, near Tuxpan. He does not accept the evidence of Meade (p. 290), who reports that a 1695 document (AGN, No. 18) identifies this ancient pueblo definitely with modern Chicontepec. In the same volume of the Archivo, Palerm has found parallel statements for the years 1693 and 1694.

There seems no real reason to doubt that Chicontepec and "Tzicoac" are one and the same. (1) The late seventeenth-century documents state so definitely; that for 1693 reads, "En el pueblo de chicoac o chicotzontepeque por otro nombre chicontepeque . . ." (2) Old "Tzicoac" is said by the Suma (No. 135) to have two subject settlements, "Aguatlan" and "Tilçipojapan"; the former still exists as Ahuatlán, the latter presumably, as San Pedro Tziltzacuapan (Mexico, Quinto censo, 1930), both in the general vicinity of modern Chicontepec. (3) The same *encomenderos,* Diego de Coria and Pedro de Meneses, are involved. Both are reported for "Tzicoac" (Suma No. 135; Epistolario 9:9; García Pimental, 1904, p. 159; Icaza, Nos. 12, 65). For Chicontepec, Hernando de Coria and Pedro Bermudes are given (Epistolario 14:75). But this difference results merely from the fact that the latter record is from a subsequent period, for we know that in "Tzicoac," Diego de Coria was succeeded by his son, Hernando de Coria, and Pedro de Meneses, by his son, Pedro Bermudes (García Pimentel, 1904, p. 159). In short, ownership is identical.

There seem to be, in fact, only two difficulties. The Códice Chimalpopoca (p. 64) lists both Chicontepec and "Tziuhcóhuac" in the same paragraph, which suggests that they are distinct towns. And the linguistic situation is not entirely reassuring. Tezozomoc does not state definitely that "Tzicoac" is in the Huasteca or that it is Huastecan in speech. But he speaks (p. 105) of the massacre of Mexican merchants there and in Tuxpan; and later, in the course of reprisals, he refers (p. 109) to the enemies as Huasteca. Still later (pp. 292, 294–295), he again implies that "Tzicoac" is Huastecan. Durán (1:165) mentions "the Huasteca of Tamapacheo and Xochpan and of Tzincoac . . ." The general impression certainly is that "Tzicoac" is a Huastecan pueblo.

With respect to the speech of Chicontepec, we have found only two sixteenth-century reports. One gives Mexicano, Tepehua, and Otomí for the *cabecera* and its subjects (Doctrinas, p. 219); the other mentions only Mexicano (Epistolario 14:75). Accordingly, if "Tzicoac" is to be identified with Chicontepec, it must be assumed that both Tezozomoc and Durán are speaking loosely—in terms of the general area which lies to the northeast of Mexico, and not in terms of a zone where Huastecan speech was current.

phantly and Moctezuma divided the spoils. There is no indication that he established his tribute collectors in the subdued pueblos,[34] and if we can believe Ixtlilxochitl,[35] it was Netzahualcoyotl, of Texcoco, who did so.

The route of the conquest is not clear. On the trip to the Huasteca, the troops passed through Tulancingo (Tezozomoc, p. 107), but no further details of itinerary are given. Tezozomoc (p. 111) indicates that on the return, the pueblos along the way either received the conquerors with gifts of food or they were pillaged. Papantla, a relatively short distance from Tuxpan, is not listed among the conquests of Moctezuma I, and claims to have preserved independence until half a century later, when it was subjugated by Moctezuma the younger (Relación de Papantla).

As a matter of fact, it seems unlikely that any real penetration of northern Totonacapan took place during the reign of Moctezuma I. Krickeberg (p. 106) notes that several towns "on the limits of Totonac territory" were conquered at this time, and Barlow (1947 a, map 4) would have virtually all of Totonacapan subjugated by Moctezuma, with exception of the immediate environs of Papantla. This alleged penetration, which is of direct concern to us, depends upon the identification of four pueblos: Chiconquiaco, Tlapacoyan, "Chapolicxitla," and Tlatlauquitepec, which are discussed one by one, in the note below.[36]

For Chiconquiaco and Tlapacoyan, alternate identifications are considered, and although Tlatlauquitepec undoubtedly lay on the fringes of Totonacapan, it was Mexicano in speech.[36] For "Chapolicxitla" no identification can be suggested. In view of this situation, we believe there is no indication of the conquest of pueblos of northern Totonacapan at this time; in any case, none of the four pueblos in question, seems to have been Totonac during the sixteenth century.

It is not unlikely that Moctezuma made his first gestures toward subduing the southern Gulf coast following the Huastecan campaign. Tezozomoc (p. 106) and Ixtlilxochitl (2:197) both mention Tuxtepec in connection with the conquests in the Huasteca. The campaign would be more intelligible if Tuxtepec were easily accessible from the Huasteca. There seems to be no record of any ancient pueblo of this name in the vicinity, and the reference presumably applies to the pueblo on the Oaxaca-Veracruz border. Perhaps, therefore, the Triple Alliance made an initial thrust to the south simultaneously with its efforts in the north. If so, following the Huastecan campaign, Mexico had bases in the southern Huasteca and far to the south, in Tuxtepec.

The date of the Huastecan campaign (table 17, No. 48) is given by the Codex Telleriano-Remensis (5:150) as the year 5 *conejos* [tochtli], or 1458. Torquemada (1:164) makes passing reference to the conquest of "Cuextlan," which must have taken

[34] As a matter of fact, the Códice Chimalpopoca (p. 67) does not even list these Huastecan pueblos among the conquests of Moctezuma.

[35] And it is very much the vogue not to; even the editor of his works never wearies of doubting his veracity. We feel, however, that the value of Ixtlilxochitl is greatly underestimated.

[36] Chiconquiaco is the name of a modern Totonac pueblo northwest of Jalapa. However, its position in the lists of conquests suggests that identification with modern Chiconquiahuitl, (map 14, No. 10) in the State of Mexico, is more likely; in this, Barlow (1947 a) concurs.

Tlapacoyan is a disconcertingly popular name. Krickeberg (p. 112) is torn between two possibilities: a town near Zacatlán, Puebla, and one on the Río Nautla. He inclines toward the latter. Of these two alternatives, we think that the Tlapacoyan (map 14, No. 28) near Zacatlán is the more likely, and at the same time, we offer a third possibility: Tlapacoya near Pachuca, in the modern State of Hidalgo. There is no evidence, incidentally, that any of the pueblos named Tlapacoyan were of Totonac speech.

The Códice Chimalpopoca (p. 67) lists the conquests in the following order: "Itzcuincuitlapilco, Tlapacoyan, Chapolicxitla, Tlatlauhquitépec." The first undoubtedly is modern Itzcuinquitlapilco, in Hidalgo; "Chapolicxitla" is unplaced. The Colección de Mendoza (5: 45) gives a slightly different listing: "Yzcuincuitlapilco . . . Atotomilco . . . Tlapacoyom . . . Chapolycxitla . . . Tlatlauhquitepec." Here the first two pueblos are to be identified with modern settlements near Pachuca, in Hidalgo; again, "Chapolicxitla" is not placed.

In the Matrícula de tributos (Colección de Mendoza 5:85), Tlapacoyan heads a list which includes "Xiloxochitlan, Xochiquauhtitlan, Tuchtlan, Coapan, Aztaopan, and Acaçacatla." Unfortunately, these towns, which should indicate the zone definitively, are difficult to identify. "Xiloxochitlan" perhaps is modern Eloxochitlán, and "Xochiquauhtitlan" may be Xochicoatlán, both in Hidalgo. However, in the vicinity of Zacatlán, in the Sierra de Puebla, we find modern Eloxochitlán, Xochicuautla, and Tuxtla. In other words, the conquered Tlapacoyan might be either that of Hidalgo or of the Sierra de Puebla. On map 14 (No. 28), the latter is shown.

Obviously, an identification of "Chapolicxitla" would be of utility in locating both Tlapacoyan and Tlatlauquitepec. Krickeberg (p. 106) places it, together with the two pueblos just mentioned, on the borders of Totonac territory. However, we are unable to suggest identification with any existing pueblo; its position on map 14 (No. 29) is frankly a guess.

Like Tlapacoyan, Tlatlauquitepec (map 14, No. 30), is a popular town name. However, its identification presents no problem, since the Matrícula de tributos makes it clear that the conquered pueblo is the one which lies in the Sierra de Puebla, between Zacatlán and Teziutlán. Although on the borders of Totonacapan, in the late sixteenth century this pueblo was Mexicano (Epistolario 14: 79), and in 1609 its inhabitants spoke "mexicano algo tosca" (Mota y Escobar, p. 196).

TABLE 17.—*The dated wars of Moctezuma I (1440–69)*[a]

| Key No., map 14 | Pueblo | Códice Chimalpopoca | Anales de Tlatelolco | Historia de los mexicanos por sus pinturas | Codex Telleriano-Remensis | Torquemada | Códice en Cruz | Other sources |
|---|---|---|---|---|---|---|---|---|
| 1 | Tlahuac [1] | 1 calli [1441] (pp. 50, 51) | | | | | | |
| 2 | Coixtlahuaca [8,32,35] | 5 tochtli [1458] (p. 52) | 5 tochtli [1458] (p. 57) | *año* 139 [1461] (p. 231) | | [1455] (1:160) | 5 tochtli 1458 (pp. 51, 52, 145) | |
| 3 | Tehuacán [2, 35] | 8 calli [1461] (p. 53) | | | | | | |
| 4 | Tlalmanalco [3,11,17,35] | 12 calli [1465] (pp. 53, 67) | 11 tecpatl [1464] (p. 59) | | 12 *casas* [calli] 1465 (5:151) | [1448] (1:158, 164)[b] [1458] | 12 calli 1465 (pp. 53, 54, 145) | |
| 5 | Huehuetlán [4] | 12 calli [1465] (p. 53) | | | | | | |
| 6 | Tepeaca [35] | 13 tochtli [1466] (p. 54) | 13 tochtli [1466] (p. 59) | | | [1459] (1:164) | | |
| 7 | Coatepec [8] | | 1 calli [1441] (p. 56) | | | | | |
| 8 | Tecalco [35] | | | | | | | |
| 9 | Cuautinchán | | | | | | | |
| 14 | Cotaxtla [8, 35] | | 10 acatl [1463] (p. 57) | *año* 141 [1463] (p. 231) | 8 *casas* [calli] 1461 (5:150) | [1457] (1:161) | | Veytia (2:219) 1457 |
| 15 | Huatusco [8, 35] | | 8 calli [1461] (p. 57) | | | [1457] (1:160, 161) | | |
| 25 | Cuautipan [6, 32] | | | | | | 3 tecpatl 1456 (pp. 45, 51) | |
| 32 | Oxtotipan [8] | | 2 tochtli [1442] (p. 56) | | | | | |
| 33 | Cohuixca [9] | | 2 acatl [1445] (p. 57) | | | | | |
| 48 | Chicontepec [36] | | | | 5 *conejos* [tochtli] 1458 (5:150) | | | Tezozomoc [1452] (pp. 116, 119) Códice Ramírez [1450] (p. 177) |
| 49 | Jiquipilco [15] | | | | 9 *conejos* [tochtli] 1462 (5:151) | | | |
| 59 | Tuxtepec [35] | | | | | | | |
| 60 | "Tepçol" [23] | | | | | | | |
| 61 | Zapotitla | | | | | | | |
| 62 | Totutla | | | | | [1455] | | |
| 63 | "Tatatelco" [24] | | | | | (1:160) | | |
| 64 | "Chinantla" [25] | | | | | | | |
| 65 | "Quauhnochco" [26] | | | | | | | |
| 66 | Cosamaloapan | | | | | [1456] (1:160) | | |
| 67 | "Cuextlan" [27] | | | | | | | |
| 68 | Tlacuilola | | | | | | | |
| 69 | Coxolitla | | | | | | | |
| 70 | Tamazola | | | | | | | |
| 71 | Acatlán | | | | | [1459] | | |
| 72 | Piaxtla | | | | | (1:164) | | |
| 73 | Tetzoyocan | | | | | | | |
| 74 | Jilotepec | | | | | | | |
| 75 | "Toçoco" [28] | | | | | | | |

[a] See the first two paragraphs of footnote a, table 16. Dubious conquest or doubtful pueblo identification is discussed in the notes which accompany map 14; numbered notes in the table refer to the comments appended to that map. Braces apply only to the column in which they are placed.

[b] The difference in date between Torquemada (1: 158) and other sources with respect to the war with the Chalcas of Tlalmanalco is explicable on the basis of distinct campaigns (footnotes 3, 11, 17, 35, map 14). Torquemada (1: 164) gives another date, calculated at 1458, which presumably applies to the definitive surrender.

place about 1459; but it would appear that this applies, not to the Huasteca, but to a pueblo on the southern Gulf coast.[37]

Tezozomoc (pp. 116, 119) gives indirect evidence which would place the Huastecan war somewhat earlier. According to him, Huastecan prisoners were sacrificed during the fifteenth year of the reign of Moctezuma, which would be 1454.

[37] Unfortunately the term "Cuextlan" is ambiguous, for which reason Torquemada's conquest is not included in map 14.

The old sources generally use "Cuextlan" as synonymous with the Huasteca. However, on the southern Gulf coast, a pueblo later conquered by the Triple Alliance bears the name of "Cuextlan" (Tezozomoc, p. 131, and footnote 2, pp. 145–146).

Indirect confirmation of the existence of this southerly pueblo is found in Ixtlilxochitl (2: 202), who reports a Texcocan campaign directed against "Cuexteca que es Panuco." But, with one exception, the identified pueblos which were conquered in the course of this war lie far to the south, in southern Puebla and adjacent Veracruz. And it cannot be a matter of chance that, along with his "Cuextlan" conquest, Torquemada (1: 164) enumerates five of the precise pueblos listed by Ixtlilxochitl (map 14, Nos. 68, 69, 71, 72, 73), as well as two more, one in northwest Oaxaca and another in central Puebla (map 14, Nos. 70, 74). It seems likely that both authors are using sources which refer to a campaign directed against the "Cuextlan" of the southern Gulf coast; but since the name more frequently is associated with the Huasteca, Ixtlilxochitl erroneously identifies this southerly "Cuexteca" with Pánuco.

To add to the confusion, in certain instances "Cuextla" evidently is synonymous with Cotaxtla (see footnote 18, map 15); yet the latter is not to be identified with the somewhat hypothetical pueblo mentioned above, for Tezozomoc (p. 130–131), twice mentions "Cuetlaxtlan" and "Cuextlan," in the same phrase.

But in honor of the occasion, the temple was prepared especially, an undertaking which required 2 years. Accordingly, the conquest would fall during the thirteenth year, or in 1452. The Códice Ramírez (p. 177) differs slightly, placing the campaign in the eleventh year, or 1450.

Not content with his laurels, Moctezuma embarked on a second campaign, which was designed to place the southern Gulf coast in the hands of the Triple Alliance. He took the initiative by sending an embassy to the rulers of "Cempoala" and "Quiahuixtlan"—two coastal Totonac centers—asking that they send him "fine shells, turtles, and pearls," stipulating, moreover, that "the turtle be alive" (Tezozomoc, p. 122). According to current custom, acceptance would have been an act of submission. Perhaps Moctezuma believed that the Totonac, impressed by his victories in the north, would offer no resistance (Durán, 1:180). But such was not the case, and with this demand, the first Cotaxtla war began.

For some obscure reason, the ambassadors of Moctezuma did not go to "Cempoala" and "Quiahuixtlan"; instead, they journeyed via Orizaba to Cotaxtla, on the southern Gulf coast, where they announced their intention of continuing to "Cempoala." At the moment, there were Tlaxcalan visitors in Cotaxtla; they said indignantly to their hosts, "By chance, are you slaves or tributaries of the Mexicans? Have you been conquered in war?" They induced the Cotaxtlans [38] to kill the messengers, and offered the military support of Tlaxcala in case of reprisal. There was a general massacre of Mexicans, both official messengers and merchants, in Cotaxtla, in "Quiahuixtlan," and in the environs of Tlaxcala.[39] The Tlaxcalans returned happily to home base, bearing handsome gifts, lavished upon them in return for their moral support, and the Cotaxtlans awaited repercussions from Mexico.

They did not wait long. A few merchants who escaped notified Moctezuma, and the forces of the Triple Alliance were mustered. They marched on Orizaba and Cotaxtla (map 14, Nos. 82, 14) and extended their conquests far to the north. The great Totonac center of "Cempoala" (map 14, No. 80) fell, and with it, "Ozeloapan" [40] (map 14, No. 89) and apparently "Quiahuixtlan" (map 14, No. 81). The inevitable arrangements were made for collecting tribute and Moctezuma installed his local representative as "mayordomo a *Cuetlaxtlan, Zempoala* y *Cuextlan*" (Tezozomoc, p. 131).

The dating of this Cotaxtla campaign (table 17, No. 14) is confused.[41] Tezozomoc (p. 122) has it follow the Huastecan conquests (which he appears to place in 1452) and precede the war with Coixtlahuaca, in the Mixteca. Durán (1:180) is in agreement; and the Códice Ramírez (pp. 177–178) gives the same sequence, although with a difference of 2 years. In other words, the three sources which are related to the hypothetical

[38] This passage of Tezozomoc (pp. 122–123) unfortunately is confusing. He speaks first of dual leadership at Cotaxtla, with one chief called Zeatonalteuctli, the other, Tepeteuhtli. Immediately thereafter, he has the Tlaxcalans address "the king of Cuetlaxtlan and Zempoala," which implies not only a single ruler, but a single one for both pueblos. Yet in the next breath, he speaks of the "principales de la costa."

As a result, it is not easy to understand the local political situation. There is a bare chance that we have here an indication of Cotaxtla dominance over "Cempoala," which might explain why the messengers of Moctezuma headed for Cotaxtla instead of going direct to "Cempoala" and "Quiahuixtlan."

[39] Durán (1:180–181) and the Códice Ramírez (p. 178) have the Mexican embassy remain in Orizaba, while the latter pueblo sent messengers to Cotaxtla, to relay Moctezuma's request. According to this version, the embassy was slaughtered in Orizaba, not in Cotaxtla.

[40] "Ozeloapan" presumably is to be identified with the late Totonac archeological site of the same name, between Jalapa and Veracruz (García Payón, 1947, p. 308).

Other pueblos conquered at this time included: *"Chichiquilan, Teoyzhuacan, Quimichtlan, Tzactlan* ["Tzauctla," Durán 1:185], *Macuixochitlan,* [and] *Tlatictlan"* (Tezozomoc, p, 128).

Chichiquila, "Teoyzhuacan" (modern Ixhuacán), and Quimixtlán (map 14, Nos. 83, 84, 85) lie southwest of Jalapa, on the Puebla-Veracruz border; during the sixteenth century, all were Mexicano in speech (Epistolario 14:86; Paso y Troncoso 5:122–123). "Tzactlan" or "Tzauctla" perhaps is to be identified with modern Zacatla (map 14, No. 86). Modern Zautla, in Puebla, seems too far north and west to have been included in this campaign.

The identification of the remaining pueblos is problematical. We find mention of a "Macuilsuchil" in Oaxaca and of a "Macuilsuchitl" in the Pánuco (Suma, Nos. 348, 353; Colección de Mendoza 5:80). Both seem too distant. Another possibility is "Macuilxochitlan," located by the Codex of Tonayan (Barlow, 1947 b) in the broken country just north of Jalapa. This pueblo must have been relatively obscure, for we find no other report of it. If the "Macuixochitlan" conquered by Moctezuma is identified with this pueblo (map 14, No. 87), his conquests would be extended thereby into the Totonac zone immediately north of Jalapa. Such an extension is not out of the question, especially since the area abuts on "Ozeloapan" (map 14, No. 89); nevertheless, it seems odd that of all the pueblos in this zone, this presumably insignificant one alone is mentioned. In the lists of Tezozomoc and Durán, "Macuixochitlan" follows Quimixtlán and "Tzactlan" and precedes "Tlatictlan," rather suggesting a location in the Chichiquila-Quimixtlán area southwest of Jalapa.

In name, "Tlatictlan" may have survived in modern Tetitlán (map 14, No. 88) or Tatela, respectively east and southeast of Chichiquila. But current maps place both modern settlements well up the slopes of the Sierra, whereas, in 1609, "Tlatectla" (presumably old "Tlatictlan") was located in the hot country (Mota y Escobar, p. 206).

[41] It is discussed further, following the second Cotaxtla campaign (footnote 45, p. 272).

Crónica X (Barlow, 1945) have the first conquest of Cotaxtla follow the Huastecan campaign and precede the conquests in Oaxaca.[42]

Other sources, not Crónica-X derived, are at variance, for they make no mention of Cotaxtla until after the Mixtecan war. Accordingly, there are two alternate interpretations:

*a.* If one follows the Crónica X cluster, Moctezuma sponsored two distinct Cotaxtla campaigns, one prior to his conquests in the Mixteca, and another subsequent to them. The first, or pre-Mixteca campaign, is that described above; the second is treated below.

In this case, the implication is that the other sources have overlooked the first Cotaxtla war and start with the second, post-Oaxaca campaign. Their dating, therefore, applies not to the first campaign of the Crónica X, but to the second.

*b.* However, if one follows the other authorities, he must assume that the Crónica X sources erroneously place the first Cotaxtla campaign as prior to the Mixtecan war; also, that they erroneously attribute two Cotaxtla campaigns instead of one to Moctezuma (see footnote 45, p. 272).

There is much to be said for either interpretation. We have elected to follow the Crónica X accounts, simply because they alone give a wealth of detail concerning the Cotaxtla campaigns, and because their identification of both with Moctezuma is highly convincing. Accordingly, we assume that the first Cotaxtla campaign took place prior to the conquest of the Mixteca, which latter is dated variously as 1455, 1458, and 1461 (table 17, No. 2).

Following the signal victory over Cotaxtla, which put a large segment of the southern Gulf coast, including southern Totonacapan, in the hands of the Triple Alliance, the latter turned its attention to the Mixteca, and the conquest of Coixtlahuaca ensued. This Mixtecan war was intimately related to the program of expansion toward the coast, for it involved a large part of the hinterland. As a result of this campaign, Moctezuma strengthened his position in the zone southwest of Jalapa and, through conquest to the south, extended his power to the Cosamaloapan drainage. The conquest of Cosamaloapan itself followed (Torquemada 1:160). These were the antecedents of the second Cotaxtla war.

Since their conquest, some years before, Cotaxtla and southern Totonacapan had been chafing under tribute demands. A second war broke out, with the uprising of Orizaba, Cotaxtla, and "Cempoala." And for the second time, Tlaxcala appeared as instigator. Visitors from that province persuaded the subject pueblos to kill the Mexican tax collectors, again promising military assistance from Tlaxcala (Tezozomoc, p. 142). Delighted, the coastal pueblos delivered to the Tlaxcalans the tribute they had been gathering for Moctezuma, and the recipients again returned home, bearing gifts.

Moctezuma's tribute collectors now appeared in Cotaxtla, with hands outstretched. They were cordially received, but immediately thereafter were imprisoned in a room, where they were suffocated by the smoke of burning chili. Later, the corpses were removed, ridiculed and maltreated (Tezozomoc, p. 143). Visiting merchants carried the word to Moctezuma. Infuriated, he pronounced judgment: "My desire is that there be no Cotaxtla, that it be totally destroyed and devastated." His counselors replied, "This will not be possible . . . it will be sufficient that half of them die . . . and of the half that remains, they may give and pay double the tribute . . ."

The allied forces marched on Orizaba and the struggle extended to the zone at large. Tlaxcalan assistance was conspicuously lacking, and the Mexicans triumphed.[43] Tribute adjustments were made and the forces of the Triple Alliance retired. The two leaders of Cotaxtla went into hiding, but later Moctezuma dispatched a special contingent charged with their execution (Tezozomoc, p. 148; Códice Ramírez, p. 180).

We have several definite dates for this victory: 1457, 1461, and 1463 (table 17, No. 14). In addition, Torquemada indicates a date which must be

[42] When Moctezuma conquered Coixtlahuaca, in Oaxaca, he already had both the Huasteca and Cotaxtla in his pocket, for the stone monument, which was dedicated with the sacrifice of Mixtecan prisoners, bore carved figures to represent his victories in Tepeaca, Tuxpan, the Huasteca, Cotaxtla, and Coixtlahuaca (Códice Ramírez, p. 179).

This detail would be highly convincing, were it not nullified by Veytia (2:219). He mentions this same stone, but has the dedication take place later, with the sacrifice not of Mixtecan but of Cotaxtlan captives.

[43] The above account is based chiefly on Tezozomoc, who naturally gives the viewpoint of Mexico-Tenochtitlan. But it would appear that this victory really belongs to Mexico-Tlatelolco (Torquemada 1:162; Barlow, 1948, pp. 26–30).

Torquemada (1:161–162) gives a distinct version of the campaign. He makes no mention of the first Cotaxtla war, and the one he describes presumably is the second. In this battle he has Tlaxcala, Cholula, and Huejotzingo aid the coastal pueblos; and in this the Anales de Tlatelolco (p. 57) concur.

in the vicinity of 1457.[44] Regardless of date,[45] by the end of the second Cotaxtla war, Moctezuma and the Triple Alliance had overrun much of the Gulf coast. In the north, they held a cluster of pueblos in the southern Huasteca. Immediately to the south, there was a sizable island of unconquered territory in northern Totonacapan.[46] But farther south, the allied forces had made a clean sweep. The important southern Totonac centers—"Cempoala," "Quiahuixtlan," and "Ozeloapan"—had been conquered during the first Cotaxtla campaign, and by the end of his reign, Moctezuma controlled the coast, from "Cempoala" to Cosamaloapan. Moreover, he held a great block of hinterland (map 14).

Probably these are to be regarded as nominal conquests: there was a battle; the Mexicans were victorious and imposed tribute. But that they did not have a strangle hold on the coast is clear from the frequency of subsequent revolts. There is no indication that Moctezuma established either garrisons or Mexican overseers in the northern stretch of the coast, although Ixtlilxochitl (2:196–197) claims that Texcoco did so. After the first Cotaxtla war, Moctezuma installed a mayordomo for the "Cempoala"-Cotaxtla zone; and following the second, both governors (Tezozomoc, p. 149) and garrison were imposed (Torquemada 1:162). Even this move did not make the conquest permanent. The immediate successors of Moctezuma added relatively little new conquered territory along the Gulf but they were busily occupied in suppressing uprisings.

## AXAYACATL (1469–81)[47]

With the death of Moctezuma I, Axayacatl replaced him as ruler. He started with a "precoronation" raid far to the south, in order to obtain prisoners for sacrifice (Torquemada 1:172). Tehuantepec and Huatulco are mentioned, but there is no indication that pueblos at such a distance were incorporated into the Mexican realm at this time. Also early in his career, Axayacatl conquered Tlatlauquitepec, which might be one of several pueblos of that name; we have placed it (map 15, No. 1) doubtfully in the State of Puebla, adjacent to several other conquests of Axayacatl.

However, his first major undertaking was the conquest of Mexico-Tlatelolco, the sister city of Mexico-Tenochtitlan, which most sources date as 1473 (table 18, No. 3). Axayacatl also devoted considerable time to recurrent campaigns in nearby areas to the west and southwest (map 15).

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[44] To reduce this passage of Torquemada (1:157, 161) to calendar years necessitates counting the years lapsed since the ninth of the reign of Moctezuma, hence there is considerable possibility of error.

[45] There is one confusing discrepancy. The Historia de los mexicanos por sus pinturas (p. 231) places the suffocation of the Mexican ambassadors by chili fumes in the year 152 [1474]. Accordingly, the event would take place, not during the reign of Moctezuma, but during that of Axayacatl, his successor.

That there was an uprising in Cotaxtla during the reign of the latter is attested by most other sources (Códice Chimalpopoca, Anales de Tlatelolco, Codex Telleriano-Remensis, Colección de Mendoza, Torquemada, and Veytia), although Tezozomoc, Durán, and Ixtlilxochitl fail to mention Cotaxtla during the regime of Axayacatl. It is perfectly possible that Tezozomoc and Durán erroneously have attributed the chili episode to the reign of Moctezuma; yet their description is so detailed and the association with Moctezuma so convincing, that it is difficult to doubt their account.

In short, there is an impasse. In this particular case, we have chosen to follow the Crónica X sources (Tezozomoc, Durán, Códice Ramírez) in attributing two Cotaxtla wars to Moctezuma—the first prior to the Mixtecan campaign, the second, subsequent to it. Barlow (1948, pp. 22, 26) has chosen the alternative. In his description of the first Cotaxtla war, he cites Tezozomoc extensively, but ignores his implied dating. He places the campaign in 1461 or 1463; we suspect that these dates refer not to this conquest, but to the subsequent one, which follows the Mixtecan campaign.

Barlow's first Cotaxtla war falls within the reign of Moctezuma, but the second transpires 6 or 7 years after his death. As a sequel to the Cotaxtla uprising, Moctezuma decreed the death of the two rulers of Cotaxtla; but Barlow (1948, footnote 59, p. 30) has these same individuals survive until 1474, when they lead the uprising during the reign of Axayacatl. However, Tezozomoc (p. 148) attributes their deaths definitely to Moctezuma, and the Códice Ramírez (p. 180) gives a detailed description: ". . . Motecuzuma . . . mandó fuesen degollados, por detrás cortadas sus cabezas y no por la garganta, y que fuesen a ejecutar esta justicia dos oidores del consejo supremo, y así ellos mismos los degollaban con unas espadas de navaja. . . ."

[46] As a general thing, the Totonac seem to have been unable to offer effective resistance; that northern Totonacapan preserved its independence probably meant that the Triple Alliance was not interested in conquering it at that time. However, a somewhat obscure statement indicates offensive warfare by unidentified groups of Totonac and Huastecans, in 1467, toward the end of the reign of Moctezuma I:

"1 *acatl* . . . A este tiempo vinieron todos los totonacas y los cuextecas, que andan desnudos, sin bragas; vinieron a pelear en Tzompanco. Ahí por primera vez vinieron a mostrar su estandarte blanco, que los guió hacia acá y que venía siendo su enseña. Finalmente, los llevaron de vencida, y fué a aplacarse la guerra en Otompan y Papahuacan" (Códice Chimalpopoca, p. 54). See also footnote 5, map 14.)

[47] Several sources place the death of Moctezuma I in 1468; the Códice Chimalpopoca (p. 55) reports his death at the end of that year; but the Colección de Mendoza (5:46–47), the Historia de los mexicanos por sus pinturas (p. 231), and Ixtlilxochitl (2:230) give 1469. Veytia (2:221), whose chronology appears frequently to lag, places it in 1464.

The terminal date for the reign of Axayacatl generally appears as 1481, although the Codex Telleriano-Remensis gives 1483.

TABLE 18.—*The dated wars of Axayacatl (1469–81)*[a]

| Key No. map 15 | Pueblo | Códice Chimalpopoca | Anales de Tlatelolco | Historia de los mexicanos por sus pinturas | Codex Telleriano-Remensis | Torquemada | Códice en Cruz | Other sources |
|---|---|---|---|---|---|---|---|---|
| 1 | Tlatlauquitepec [1] | 3 calli [1469] (p. 55) | | | | | | |
| 2 | Cuaxoxoca [2] | 4 tochtli [1470] (p. 55) | | | | | | |
| 3 | Tlatelolco [3] | 7 calli [1473] (p. 55) | 7 calli [1473] (pp. 17, 59) | *año* 151 [1473] (p. 231) | 7 *casas* [calli] 1473 (5: 151) | [1474] (1: 173, 177) | 7 calli 1473 (pp. 59, 60, 145) | Ixtlilxochitl 1463 [b] (2: 251–252) |
| 4 | Huexotla [4, 35] | 8 tochtli [1474] (p. 56) | | | | | 8 tochtli 1474 (pp. 61, 145) | |
| 5 | Matlatzincas [5, 22, 35] | 8 tochtli [1474] 12 tochtli [1478] (pp. 56, 57) | 9 acatl [1475] (p. 59) | *año* 155 [1477] (p. 231) | 6 *navajas* [tecpatl] 1472 (5: 151) | [1472] [1475] (1: 181–182) | | |
| 6 | Ocuilan [22] | 10 tecpatl [1476] (p. 56) | 10 tecpatl [1476] (p. 59) | | 11 *navajas* [tecpatl] 1476 (5: 151) | [1474] (1: 181) | | |
| 7 | Cuernavaca [6] | | | | | | | |
| 8 | Pochote [7] | 11 calli [1477] (p. 56) | | | | | | |
| 9 | Jiquipilco | 12 tochtli [1478] (p. 57) | | | 12 *conejos* [tochtli] 1478 (5: 152) | [1474] (1: 181) | 12 tochtli 1478 (pp. 62–64) | |
| 10 | Toluca | | | | 6 *navajas* [tecpatl] 1472 (5: 151) | [1475] (1: 182) | | |
| 11 | Zinacantepec | | | | | [1472] (1: 181) | | |
| 12 | Tlacotepec | | | | | [1475] (1: 182) | | |
| 33 | Totutla | | | | | | | |
| 34 | Cotaxtla [18, 35] | | | *año* 153 [1475] (p. 231) | 10 *cañas* [acatl] 1475 (5: 151) | [1472] (1: 176) | 9 acatl 1475 (pp. 62, 145) | |
| 39 | Tuxpan | | | | | [1475] (1: 182) | | |
| 50 | Tehuantepec | | | | | | | |
| 51 | Huatulco | | | | | | | |
| 52 | Huejotzingo [26] | | | | | [1469] (1: 172) | | Veytia 1468 (2: 223) |
| 53 | Atlixco [26] | | | | | | | |
| 54 | Suchixtepec [27] | | | | | [1472] (1: 176) | | |
| 55 | "Malacatepec" | | | | | | | |
| 56 | Coatepec [28] | | | | | [1474] (1: 181) | | |

[a] See the first two paragraphs of footnote a, table 16. Dubious conquest or doubtful pueblo identification is discussed in the notes which accompany map 15; numbered notes in the table refer to the comments appended to that map. Brackets apply only to the column in which they are placed.

[b] Apparently through error, the date is given as 1463 instead of 1473 (cf. Ixtlilxochitl, ftn. 2, 2: 252).

The Gulf coast was not neglected, for Moctezuma's conquests in that area were far from secure.[48] It was decided to invite the "new vassals" of "Cempoala" and "Quiahuixtlan" to an important ceremony, with the understanding that if they declined, a reconquest was indicated (Tezozomoc, p. 216). Prudently, they responded with alacrity and war was averted.

But just to the south, Cotaxtla revolted once more, in 1475 (table 18, No. 34; map 15, No. 34). To the north, a new uprising broke out in the Huasteca. There are few details concerning the latter; Torquemada (1:182) states merely that "certain Mexican and Texcocan merchants" were murdered in Tuxpan and that war followed. He places this episode after his second war in the Matlatzinca area, and, as nearly as can be told, his date would be roughly 1475. In any case, the campaign seems to have come late in the reign; at least the Huastecan pueblos appear at the end of the lists of conquests (Códice Chimalpopoca, p. 67; Anales de Tlatelolco, p. 17; Colección de Mendoza 5:46). A date somewhere between 1475 and 1480 cannot be far wrong.

Tuxpan (map 15, No. 39), was not the only Huastecan pueblo subjugated at this time, and at least two others, also on the frontier of northern Totonacapan, succumbed. These are Zapotitlán (map 15, No. 37), in the vicinity of Temapache, and "Micquetlan," presumably modern Mequetla (map 15, No. 38), on a tributary of the Río Tuxpan. Moreover, the "Tenexticpac," conquered by Axayacatl, suggests modern Tenixtepec, near Papantla. However, we are relatively sure that the

[48] In fact, they were so uncertain that Durán (1:281) even speaks of "cempualtecas y quiauiztecas, dos prouincias que residen junto á la costa, las quales hasta entonces no se auian conquistado . . ."

conquered pueblo lay considerably farther north and is to be identified with a now extinct Huastecan settlement (map 15, No. 40).[49]

Skirmishes so close to Papantla must have had reverberations in northern Totonacapan, yet there is no mention of the conquest of any Totonac pueblo.

## TIZOC (1481–86)[50]

Following the death of Axayacatl, the brief rule of Tizoc ensued. As usual, with the change of rulers, a new military campaign was contemplated; some wished to attack Michoacán; others suggested "the coasts of Cotaxtla," apparently once more in open revolt (Tezozomoc, p. 249). Reputed Texcocan conquests during the first year of the reign of Tizoc probably refer to the quashing of this rebellion by the Triple Alliance.[51]

As a military leader, Tizoc was not conspicuously successful. Sahagún (2:280) states flatly that no wars took place during his regime, but a respectable list of conquests is attributed to him by other sources (Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza). So few of these are dated that no table has been prepared; the dates we have are mentioned in the text.

The activities of Tizoc evidently were widely scattered (map 16), and some of his conquests are not identifiable (footnotes to map 16). However, he seems to have been moderately active west of the Valley of Mexico. He reconquered Toluca (map 16, No. 21) (Colección de Mendoza 5:47) and, in the year 5 *navajas* [tecpatl], or 1484,[52] suppressed a rebellion in Zinacantepec (map 16, No. 24) (Codex Telleriano-Remensis 5:152). "Çillan, Matlatzinco, Maçatépec," or "Mazauacan" (Códice Chimalpopoca, p. 67; Anales de Tlatelolco, p. 17) all refer to campaigns in the Toluca zone. Under the circumstances, it seems likely that the Tlacotepec (map 16, No. 25) conquered by Tizoc (Torquemada 1:182) was the pueblo of that name near Toluca—the same Tlacotepec conquered previously by Axayacatl (Torquemada 1:182), and not one of the better-known pueblos of that name (of which there is one in Puebla, one in Oaxaca, and another in Guerrero).

In part, the efforts of Tizoc were expended on war with Metztitlán (map 16, No. 26) and the adjacent Huasteca. Dibble (Códice en Cruz, p. 65) places this campaign early in the reign (2 calli [1481]). The Metztitlán hostilities are of some interest to us because the Huastec, immediate neighbors of the Totonac, fought against the Triple Alliance (Tezozomoc, p. 251).[53] They were more directly involved in the conquest of Tlatlacxoquico (map 16, No. 18), in what must have been the reconquest of Mequetla (map 16, No. 10), Temapache (No. 9), and "Occentépetl" (No. 17). Again, these skirmishes in the Huasteca should have been felt in adjacent Totonacapan, yet there is no indication of the conquest of the latter. As far as we can tell, Papantla and the surrounding Totonac settlements still were independent of Mexican rule.

## AHUIZOTL (1486–1502)[54]

In 1486, Tizoc died and was succeeded by Ahuizotl. Under him, the Triple Alliance not only

[49] During the sixteenth century, there appear to have been two settlements on the Totonacapan-Huastecan border with very similar names:

*a.* "Tenuxtepeque," an *estancia* of Papantla, held in *encomienda,* in the midsixteenth century, by Andrés de Tapia (Suma, No. 449). This, we believe, has survived in modern Tenixtepec, on the coast, just southeast of Papantla, and within the present municipal unit of the latter name.

*b.* "Temyztiquipac," "Tenexticpac," "Tenestequipaque" or "Tenesquipaque," a *cabecera* held by Juan de Villagómez (Icaza, No. 411: Doctrinas, p. 219; Epistolario 9:31; García Pimentel, 1904, p. 179).

During the sixteenth century, this pueblo spoke both Mexicano and Huasteco (Doctrinas, p. 219). It no longer exists, but it must have been situated well to the north of Papantla, for it was bounded by Tamiahua (Suma, No. 530) and "Tzicoac" (Chicontepec; see footnote 33, p. 267) (Suma, No. 135). Moreover, since part of its tribute was paid in fish, the pueblo must have been either on the coast or near a river (Epistolario 9:31). We have located it (map 15, No. 40) near the coast, in a line between Tamiahua and Chicontepec, since the holdings of Villagómez are said to have been in this zone (Epistolario 14:75).

Obviously, both speech and location identify this extinct pueblo as Huastecan; presumably it, and not Tenixtepec, of Papantla, was that conquered by Axayacatl. However, Barlow (1947 a, map 4), identifies the conquest with the Papantla Tenixtepec, hence his map indicates penetration of northern Totonacapan. Cook and Simpson (p. 203 and No. 549 of map) also have made the same identification, which we believe to be erroneous.

[50] The Colección de Mendoza (5:47–49) gives the above dates; other sources start the reign in 1482 and 1483, and end it in 1485.

[51] The Códice en Cruz (pp. 67, 146) indicates that Netzahualpilli, of Texcoco, conquered Orizaba in 1481; and Ixtlilxochitl (2:262–263) attributes the conquest of Orizaba, Totutla, Oxtotipan, and "other provinces of the Gulf" to him in this year.

[52] In this same year, Tizoc subdued the rebellious "Chicpantlaca" (Anales de Tlatelolco, p. 59).

[53] By the end of the sixteenth century, "Tzicoac" and Metztitlán were not allies, but traditional enemies (Relación de Metztitlán).

[54] The Colección de Mendoza (5:49–51) gives the above dates. According to Anales de Tlatelolco (p. 17), Ahuizotl was not installed as ruler until 2 years after the death of his predecessor. The Códice Chimalpopoca (p. 59) has him rule until 1503.

reconquered many pueblos, but pushed into new and distant fields, extending its conquests as far south as the modern borders of Guatemala.

The chronology of Ahuizotl's conquests is complicated (table 19), owing in part to the disperse character of his campaigns and in part to deficiencies and contradictions in the sources. From the start, there is disagreement concerning the sequence of his initial campaigns, which appear to have been extraordinarily scattered. The accounts of Tezozomoc and Torquemada begin with what apparently was a major campaign in the Mazahua country just west of the Valley of Mexico; but the Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza are strangely silent concerning military activities in the west, unless their conquest of "chiapanecas" be so interpreted. This word is particularly confusing, for apart from Chapa de Mota (map 17, No. 5), Ahuizotl conquered far to the south, in the modern State of Chiapas, and the term might apply to either area. However, except for Ixtlilxochitl (2:271), the sources place the majority of his conquests in the south subsequent to 1495.

The ghost of the Huasteca was difficult to lay, and during the early years of his reign, Ahuizotl bore down on this zone (table 19, Nos. 3, 58), and toward the end of his rule, there was a flurry on the borders of the Huasteca, when a rebellion in Huejutla (table 19, No. 64) was quashed. Presumably as a byproduct of one of the northeasterly campaigns, Totonac "Tuzapan" (map 17, No. 71) was conquered.

Although Mexican sources mention only this one Totonac pueblo, two Texcocan authorities (Códice en Cruz, pp. 70, 146; Ixtlilxochitl 2:271) report military action farther south on the Gulf coast. Both mention the conquest, in 1486, of the Totonac pueblo of Nautla. As usual, they claim this victory for their own people, for which reason Nautla does not appear on map 17. Nevertheless, it seems likely that the Triple Alliance was involved. Ixtlilxochitl boasts that the principal citizens of Nautla, including the ruler, were captured, and that the entire Gulf coast, from Nautla to Pánuco, thereby came under the control of Texcoco. This is not a particularly convincing claim, for in the days of Moctezuma II, Nautla was in Mexican hands (Díaz del Castillo 1:343).

Farther south, the pueblo of "Mictlanquauhtla" (map 17, No. 4) fell the same year (table 19, No. 4). This conquest, and the preceding one, suggest fairly extensive military action along the Gulf coast, although other than "Tuzapan" and Nautla, no Totonac pueblos are mentioned.

Through a series of conquests in modern Puebla, Veracruz, and Oaxaca, the way was prepared for an attack on the Isthmus of Tehuantepec; most military action in the latter zone apparently took place in the course of the middle or late 1490's. Torquemada (1:192) alone has Ahuizotl penetrate beyond the Isthmus, into modern Guatemala, during the latter years of his reign; he does not, however, claim conquest of that area.

Ahuizotl had a sizable series of victories to his credit in the Balsas Basin and in coastal Guerrero. For the most part, these are undated. Tlapa, in Guerrero (table 19, No. 2), was among the early conquests.[55] We have no precise date for the conquest of Zacatula, but Ixtlilxochitl (2:274–283), who claims it as a Texcocan victory, has it sandwiched between events which took place in 1489 and 1492. "Cultepec, where the mines now are" (Codex Telleriano-Remensis 5:153), presumably refers to the famous mining center not far from Taxco; it fell in 1496 or shortly thereafter (table 19, No. 56). Tezozomoc (pp. 340–343) places the conquest of towns in the Balsas following the early victories in the Huasteca and preceding the wars in the Oaxaca-Tehuantepec zone; neither he nor Torquemada mentions the coast of Guerrero. As far as we can tell, the conquests in this area were scattered over a considerable period of time.

The success of Ahuizotl as a military leader is undeniable, yet his campaigns were characterized by their diffuse nature. Instead of mopping up systematically, zone by zone, he apparently maintained a large series of dispersed war parties in the field concurrently. Our impression is one not of an empire builder (Barlow, 1947 a, p. 221), but of a vigorous and effective looter, whose raids were widespread and spotty, both in time and in place.

[55] The "Tlacupan" of Torquemada (1:186) presumably is Tlapa. The Códice Chimalpopoca (p. 58), the Códice en Cruz (pp. 70–71, 146), and Ixtlilxochitl (2:273) mention Tlapanecas among the captives sacrificed in 1487.

TABLE 19.—*The dated wars of Ahuizotl (1486–1502)* [a]

| Key No., map 17 | Pueblo | Códice Chimalpopoca | Anales de Tlatelolco | Codex Tellerianо-Remensis | Torquemada | Códice en Cruz | Ixtlilxochitl |
|---|---|---|---|---|---|---|---|
| 1 | Cuautenango [1] | 7 tochtli [1486]<br>9 tecpatl [1488]<br>(pp. 57, 58) | 10 calli [1489]<br>(p. 60) | 9 *navajas* [tecpatl] 1488<br>(5:152) | [1489]<br>(1:186, 187) | | |
| 2 | Tlapa [1, 28] | 7 tochtli [1486]<br>(p. 57) | | | [1486]–[1487]<br>(1:186) [b] | | 1486<br>(2:271) |
| 3 | Chicontepec [1, 27] | 7 tochtli [1486]<br>9 tecpatl [1488]<br>(pp. 57, 58) | 8 acatl [1487]<br>(p. 60) | | [1486]–[1487]<br>(1:186) [b] | 8 acatl 1487<br>(p. 70) | 1486<br>(2:272) |
| 4 | "Mictlanquauhtla" [1, 2] | 7 tochtli [1486]<br>(p. 57) | | | | | |
| 5 | Chapa de Mota [1] | 9 tecpatl [1488]<br>(p. 58) | 11 tochtli [1490]<br>(p. 60) | 9 *navajas* [tecpatl] 1488<br>(5:152) | | | |
| 6 | Jico [1, 25] | 13 tecpatl [1492]<br>(p. 58) | | 1 *casa* [calli] 1493<br>(5:153) | | | |
| 7 | Cuicatlán [1, 18] | 1 calli [1493]<br>(p. 58) | | | | | |
| 8 | Jaltepec [1] | 1 calli [1493]<br>8 tecpatl [1500]<br>(p. 58) | | | ca. [1500]–[1502]<br>(1:193) [c] | | 1493<br>1500<br>(2:283, 289) |
| 9 | Tiltepec [3] | 3 acatl [1495]<br>(p. 58) | | | | | 1495<br>(2:283) |
| 10 | Juchitán [4, 38] | 4 tecpatl [1496]<br>(p. 58) | 5 calli ]1497]<br>(p. 60) | | | | 1486<br>(2:271, 283) |
| 11 | Tehuantepec [4, 38] | 5 calli [1497] | 6 tochtli [1498]<br>(p. 60) | | ca. [1497]–[1500]<br>(1:192) [d] | | 1497<br>1496<br>(2:283, 289) |
| 12 | Amatitlán [4, 38] | (p. 58) | 5 calli [1497]<br>(p. 60) | | | | 1499<br>1486<br>(2:271, 283) |
| 14 | Zaachila [39] | | | 3 *cañas* [acatl] 1495<br>(5:153) | | 4 tecpatl 1496<br>(pp. 75, 146) | 1497<br>1492<br>(2:283) |
| 30 | Coyulapa | | 9 tecpatl [1488]<br>(p. 60) | | [1489]<br>(1:186, 187) | | 1486<br>(2:271) |
| 32 | "Cuetzalcuitlapillan" [12, 31] | | | | | | |
| 40 | Huautla [19] | | | | [1490]<br>(1:187) | | |
| 41 | Mezquititán [20] | | | | [1490]<br>(1:191) | | |
| 43 | Coapiloloya | | | | [1489]<br>(1:186, 187) | | |
| 54 | Atizapán | | | 1 *casa* [calli] 1493<br>(5:153) | | | |
| 55 | Mitla | | | 2 *conejos* [tochtli] 1494<br>(5:153) | | | |
| 56 | Sultepec | | | 4 *navajas* [tecpatl] 1496<br>(5:153) | ca. [1497]–[1500]<br>(1:192) [d] | | |
| 57 | Mazahuas [26] | | | | [1486]–[1487]<br>(1:186) [b] | | |
| 58 | Tuxpan [27] | | | | [1486]–[1487]<br>(1:186) [b] | | |
| 59 | "Cuextlan" [29] | | | | [1489]<br>(1:186, 187) | | |
| 60 | "Chinantla" [30, 35] | | | | | | |
| 61 | Quimixtlán | | | | | | 1486<br>(2:271) |
| 62 | Atlixco [32] | | | | ca. [1490]<br>(1:191) | | |
| 63 | Tlacolula | | | | [1497]<br>(1:191) | 2 tochtli 1494<br>7 acatl 1499<br>(pp. 74, 79) | 1486<br>(2:272) |
| 64 | Huejutla | | | | ca. [1500]–[1502]<br>(1:193) [c] | | |
| 76 | Soconusco | | | | | | |
| 84 | Yehaultepec | | | | | | |
| 85 | Zapoteca [41] | | | | | | |
| 86 | Mixteca alta [41] | | | | [1486]–[1487]<br>(1:186) [b] | 8 acatl 1487<br>(p. 70) | 1486<br>(2:271) |
| 87 | Mixteca baja [41] | | | | | | |
| 88 | Chiapas [42] | | | | | | |
| 89 | "Amextloapan" [43] | | | | | | |
| | Nautla [40] | | | | | | 1499<br>(2:289) |
| | | | | | | 7 tochtli 1486<br>(pp. 69–70, 146) | 1486<br>(2:271) |

[a] See first two paragraphs of footnote a, table 16. Dubious conquest or doubtful pueblo identification is discussed in the notes which accompany map 17; numbered notes in the table refer to the comments appended to that map. Braces apply only to the column in which they are placed.

[b] Torquemada lists wars with "Maçahuas" and "Tziuhcoacas [Chicontepec] y Tocpanecas," as well as with the "Tzapotecas" and those of "Tlacupan" (evidently Tlapa; see footnote 28, map 17). These campaigns must have taken place during the first two years of the reign of Ahuizotl, since the captives were sacrificed at the dedication of the temple of Huitzilopochtli, in the year 8 acatl, or 1487 (Códice Chimalpopoca, p. 58; Códice en Cruz, pp. 70–71, 146). Ixtlilxochitl (2: 273) also gives 1487, but places the inauguration of the temple in the third year of the reign.

[c] Following the inundation of Tenochtitlan and prior to the death of Ahuizotl, in 1502. The flood apparently took place in 8 tecpatl, or 1500 (Códice Chimalpopoca, p. 58 [cf. Torquemada 1: 192] Anales de Tlatelolco, p. 60; Códice en Cruz, p. 147), although the Historia de los mexicanos por sus pinturas (p. 231) gives a date which we calculate at 1498.

[d] Following the twelfth year of the reign (1497) and prior to the flood mentioned in the preceding note.

## MOCTEZUMA II (1502–20)

Moctezuma, the younger, succeeded Ahuizotl in 1502 [56] and, until interrupted by the arrival of the Spaniards, continued the program of expansion southward. His activities were, in part, concentrated in Oaxaca and adjacent areas, although he pushed farther south, in the steps of Ahuizotl, to reconquer Soconusco (Colección de Mendoza 5:50). It is claimed somewhat dubiously that, late in the reign, he penetrated Guatemala and Nicaragua (Torquemada 1:218–219).

[56] Sources agree on the above dates, except for the Códice Chimalpopoca (p. 59), which places the death of Ahuizotl in the year 11 acatl, or 1503.

A considerable part of his time was devoted to intermittent wars with Tlaxcala, and a major uprising in the Mixteca and adjacent zones likewise kept him occupied (table 20). It is evident that the bulk of the previous conquests to the south was precarious; Cotaxtla, for example, received his ambassadors with ill will, but Moctezuma apparently had no time for reprisal (Torquemada 1:214).

He made few conquests in the far north, and the Huasteca appears to have enjoyed a well-deserved respite. Isolated campaigns were directed toward that general area, but there is no suggestion of large-scale operations (map 18).

TABLE 20.—*The dated wars of Moctezuma II (1502–20)*[a]

| Key No., map 18 | Pueblo | Códice Chimalpopoca | Anales de Tlatelolco | Historia de los mexicanos por sus pinturas | Codex Telleriano-Remensis | Torquemada | Códice en Cruz | Ixtlilxochitl |
|---|---|---|---|---|---|---|---|---|
| 1 | "Teotepec" [1, 2, 29] | 2 acatl [1507] (p. 60) | 2 acatl [1507] (p. 61) | | | [1507] (1:210) | | |
| 2 | Ixtlán [1] | | | | | [1506] (1:208, 210) | | |
| 3 | Huejotzingo [3] | 2 acatl [1507]<br>3 tecpatl [1508] (p. 60) | 10 acatl [1515]<br>12 calli [1517] (pp. 61–62) | | | [1509]<br>[1510] (1:211, 213) | | |
| 4 | Atlixco [3] | 2 acatl [1507] (p. 60) | | | | [1502] (1:195, 210, 213) [1507] [1510] | | 1508 (2:304) |
| 5 | Tenango [3, 4] | | | | | | | |
| 6 | Ixpantecpec [5, 29, 51] | 5 tochtli [1510] (pp. 60–61) | 5 tochtli [1510] (p. 61) | | 6 *cañas* 1511 [acatl] (5:154) | [1510] (1:213–214) | 5 tochtli 1510 (p. 105, 147) | 1509 (2:310) |
| 7 | Suchiltepec [5] | | | | | [1511] (1:214) | | |
| 8 | Tlaxiaco [5, 50] | 6 acatl [1511] (p. 61) | | | | [1503] (1:196–197, 215) [1511] | 11 acatl 1503 (pp. 84–85, 147) | |
| 9 | Quimixtlán [5] | 7 tecpatl [1512] (p. 61) | | | | | | |
| 10 | "Iztactlallocan" [5, 6, 29] | 9 tochtli [1514] (p. 61) | 10 acatl [1515] (p. 61) | | 10 *cañas* 1515 [acatl] (5:155) | [1514] (1:215–216) | | |
| 11 | Ocotlán [5] | | | | | | | |
| 12 | Zenzontepec [5] | 10 acatl [1515] (p. 61) | | | | [1516] (1:228) | | |
| 12a | "Texoquauhtli" [6a] | 12 calli [1517] (p. 63) | | | | | | |
| 13 | Achiutla [29] | | 12 tecpatl [1504] (p. 61) | | | [1503] (1:196–197) | | |
| 14 | Sosola [29] | | 13 calli [1505] (p. 61) | *año* 184 [1506] (p. 231) | 4 *casas* 1509 [calli] (5:154) | [1506] (1:207–209) | | 1506 (2:309) |
| 16 | Tututepec [49] | | | | 8 *casas* 1513 [calli] (5:154) | [1506] (1:208) | 8 calli 1513 (p. 106) | 1507 (2:309) |
| 33 | Nopala | | | | 7 *navajas* 1512 [tecpatl] (5:154) | [1512] (1:215) | | |
| 37 | Caltepec | | | | | | 11 acatl 1503 (pp. 84–85, 147) | |
| 39 | Tlayehualancingo [11, 25, 33] | | | | 9 *conejos* 1514 [tochtli] (5:155) | | | |
| 41 | Malinaltepec | | | | | [1503] (1:196–197, 213) [1510] | | |
| 42 | Mixtepec | | | | 7 *navajas* 1512 [tecpatl] (5:154) | | | |
| 43 | Quetzaltepec [44, 49] | | | | | (1:215–216) [1514] | 8 calli 1513 (p. 106) | |
| 44 | Ixtlahuaca [13, 27, 29] | | 9 tochtli [1514] (p. 61) | | | | | |

See footnote at end of table.

TABLE 20.—*The dated wars of Moctezuma II (1502–20)*[a]—Continued

| Key No., map 18 | Pueblo | Códice Chimalpopoca | Anales de Tlatelolco | Historia de los mexicanos por sus pinturas | Codex Telleriano-Remensis | Torquemada | Códice en Cruz | Ixtlilxochitl |
|---|---|---|---|---|---|---|---|---|
| 45 | Zacatepec [14] | | | | | [1517]–[1519] (1: 228) | | |
| 47 | Jaltianguis | | | | | | 11 acatl 1503 (pp. 84–85, 147) | 1516 (2: 333) |
| 49 | Ixcuintepec | | | | | [1506] (1: 210) | | |
| 52 | Sola | | | | | [1508] (1: 211) | | |
| 55 | Amatlán [29] | | 4 calli [1509] (p. 61) | | | | | |
| 63 | "Tózac" [30] | | 7 tecpatl [1512] (p. 61) | | | | | |
| 64 | Huilotepec [49] | | | | | | 3 tecpatl 1508 (pp. 104, 147) | |
| 73 | Mitla | | | | | [1508] (1: 211) | | |
| 92 | Mixteca [40] | | | | 2 *cañas* 1507 [acatl] (5: 154) | [1506] (1: 207) | | |
| 94 | Huautla | | | | | [1505] (1: 203–204, 208) | | |
| 95 | Tehuantepec | | | | | [1506] (1: 207) | | |
| 96 | Coixtlahuaca | | | | | | | |
| 97 | "Yopitzingo" [42] | | | | | [1506] (1: 209, 215) | | |
| 98 | Huaquechula | | | | | [1512] [1508] (1: 211) | | |
| 99 | Amatitlán | | | | | [1509] (1: 211) | | 1514 (2: 319) |
| 100 | Juchitán | | | | | [1510] (1: 213) | | |
| 101 | Cuetzalapan | | | | | [1513] (1: 215) | | |
| 102 | "Cihua" [43] | | | | | [1514] (1: 215) | | |
| 106 | "Maçatzintla" [47] | | | | | [1517]–[1519] (1: 228) | | |
| 110 | "Tamoanchan" [49, 50] | | | | | | 12 tecpatl 1504 (p. 85) | |

[a] See the first two paragraphs of footnote a, table 16. Dubious conquest or doubtful pueblo identification is discussed in the notes which accompany map 18; numbered notes in the table refer to the comments appended to that map. Braces apply only to the column in which they are placed.

Mexican sources make scant mention of Totonacapan at this time. "Jicotepec" (map 18, No. 28), modern Villa Juárez, was conquered. On the main route to Papantla and the Huasteca, it was an ancient conquest of Texcoco (p. 22), and during the sixteenth century was in part Totonac. Other than this, Mexican sources report the subjugation of only three Totonac pueblos: Pantepec (map 18, No. 70), on the northern limits of the zone;[57] and Pancoac and Tlayehualancingo (map 18, Nos. 38, 39).

However, various sixteenth-century *relaciones geográficas* indicate extensive conquests in Totonacapan during the reign of the younger Moctezuma. Several pueblos—Papantla,[58] Chapultepec and Tepetlán (map 18, Nos. 114, 115, 116), the two latter near Jalapa—claimed to have preserved their independence until this time (Paso y Troncoso 5: 110, 118). Jalapa, in part Totonac, and Ixhuacán, a nearby Mexicano pueblo (map 18, Nos. 117, 118), both reported having been conquered for the first time by Moctezuma II (Paso y Troncoso, 5: 102, 122).

Jilotepec and Coacoatzintla (map 18, Nos. 119, 121) also indicated pretty clearly that their submission to Mexico dated from this era (Paso y Troncoso 5: 106, 110). For Tlacolulan, the same situation is implied (see footnote 56, map 18). The conquest of Naolinco, Acatlán, Miahuatlán, and Colipa (map 18, Nos. 122–125) is attributed to Moctezuma (see footnote 57, map 18), and, despite some confusion, the same presumably holds for Jonotla and Ecatlán (map 18, Nos. 127, 128), two Totonac towns farther west, in the Sierra de Puebla (Paso y Troncoso 5: 128, 140).[59]

[57] Krickeberg (p. 109) places Pantepec and Caltepec "in a region of Totonac speech." However, he locates Caltepec near Teziutlán, in modern Puebla. We find a Caltepec in the census reports of Puebla, but far to the south, near Tehuacán.

[58] ". . . tenian estos yndios antiguamente un governador puesto por *monteçuma* que los tenia en paz y que antes que *monteçuma* nasçiese ni eredase este rreyno no estauan estos yndios subjetos al padre de *monteçuma* ni á otra persona y que tenian guerra con el y defendían sus tierras y peleauan con fechas [*sic*] y arcos desnudos en cueros, y que despues vinieron donde á muchos anos que ya estauan cansados de defender sus tierras é términos se dieron biamente á *monteçuma* al qual obedeçian como dicho es . . ." (Relación de Papantla).

[59] In 1581, Jonotla informants estimated that their conquest by Moctezuma had taken place about a hundred years before; and, at the same time, those of Ecatlán declared that they had been subjugated by the Mexicans 20 years prior to the coming of the Spaniards. Despite these inaccuracies in dating, the reign of the younger Moctezuma presumably is indicated.

Of other Totonac settlements—Almolonga, Misantla, Hueytlalpan, "Matlatlan," Chila, and Jojupango—we know that they were tributaries of Moctezuma (Paso y Troncoso 5:119; *relaciones geográficas* of Misantla, Hueytlalpan, "Matlatlan" y Chila, and Jojupango). Since they do not appear among previous conquests, we infer that they were subjugated in the days of Moctezuma II; accordingly, they have been included in map 18 (Nos. 126, 129, 130–133).

A few pueblos in this same general area—Totonac and Mexicano alike—apparently preserved their independence. Zacatlán, in the Sierra de Puebla, proudly declared that it was free, but that from time to time it voluntarily bestowed gifts on Moctezuma (Relación de Zacatlán).[60] Tuzamapan and Ayotoxco, Totonac towns near Jonotla, apparently escaped the Mexican yoke entirely (Paso y Troncoso 5:133, 137); and Tetela and Totutla, both Mexicano settlements in the Sierra de Puebla, made no mention of a conquest by the Mexica (Paso y Troncoso 5:147, 168).

Despite the fact that the Mexican sources pay scant attention to campaigns in Totonacapan, it is evident from the above that a good many conquests were made in this area at this time; in fact, as far as we can determine, it was during the reign of the second Moctezuma that most of northern Totonacapan was subjugated. In part, the penetration was peaceful; for example, Tlacolulan, near Jalapa, stated that when tribute was requested the demand was met, apparently without bloodshed (Paso y Troncoso 5:108).

But other Totonac towns did not fare as easily. Papantla described a long and exhausting struggle. It, as well as Hueytlalpan, Jojupango, "Matlatlan" and Chila, had Mexican governors imposed—a clear indication of military conquest.[61] In addition, Moctezuma maintained garrisons "and many arms" in at least two pueblos of Totonacapan: Acatlán, north of Jalapa, and Nautla, on the coast (Paso y Troncoso 5:113, Díaz del Castillo 1:343). There are other indications, too, of conquest by violence. The little Totonac town of Chiltoyac, near Jalapa, attributed its depleted population to "war with Montesoma" and to epidemics (Paso y Troncoso 5:119).

## SUMMARY

We have reviewed the conquests of the Mexicans, ruler by ruler, and have seen that the most important pueblos of southern Totonacapan were subjugated by the elder Moctezuma (1440–69), in the course of his Cotaxtla campaigns.

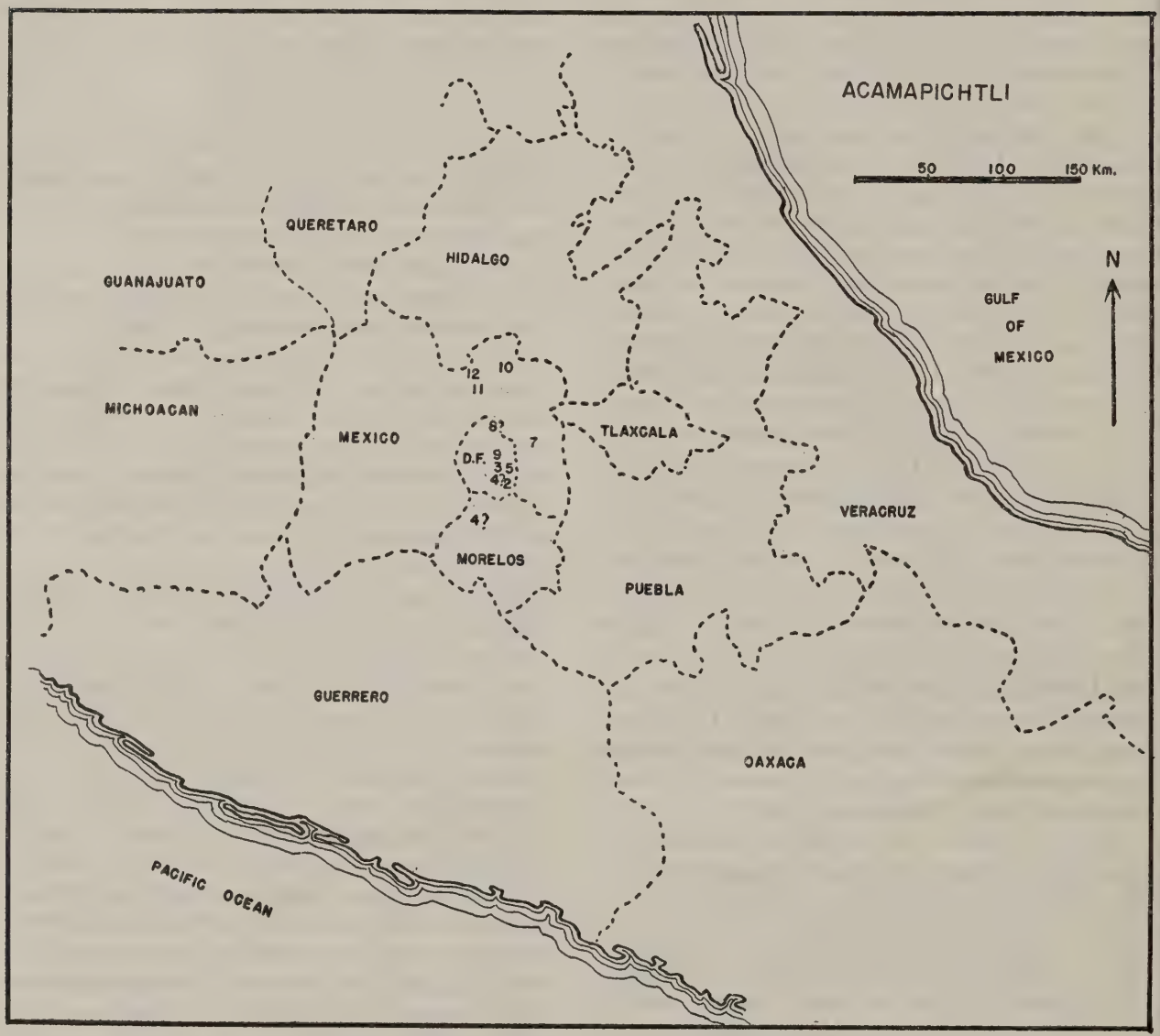
It is quite possible that even this early northern Totonacapan was beginning to feel a certain amount of pressure, owing to Mexican conquests along the borders. Through them, a wedge of Mexican influence was inserted between Totonacapan and the Huasteca (map 14, Nos. 48, 78, 79); and it is possible that several dubiously identified Mexican victories (map 14, Nos. 28–30; ftn. 36, p. 268) separated Totonacapan from her traditional Tlaxcalan allies.

Even so, northern Totonacapan apparently remained substantially inviolate until the days of Ahuizotl (1486–1502). In the first year of his rule, Nautla was conquered (by Netzahualpilli, of Texcoco, according to Texcocan sources); and at some unspecified time, a campaign was directed against "Tuzapan," in northern Totonacapan. Considerably later, during the reign of the younger Moctezuma (1502–20), most of the remaining area of northern Totonacapan came under Mexican rule. Mexican sources pay little attention to these conquests,[62] but others attribute a sizable series of campaigns in this area to Moctezuma II. By 1519, when the Spaniards appeared on the scene, virtually all of Totonacapan—both northern and southern—was, at least nominally, under Mexican control.

[60] See the succeeding footnote, which suggests that Zacatlán may not have been entirely free of Mexican control, in view of its gifts to Moctezuma. Torquemada (1:280) states that Zacatlán was subject to Mexico.

[61] "México tenia en su tiempo en el hacer guerra esta órden: que yendo á la guerra, al que se daba de paz no tenia sobre él tributo cierto, sino que tantas veces en el año le llevaban presente á su discrecion del que lo llevaba; pero si era poco mosábales (*sic*) mal rostro, y si mucho agradecíaselo. Y en estos no ponia mayordomo ni recaudador ni cosa: el señor se era señor. Los que tomaba de guerra decian *tequitin tlacotle*, que quiere decir, tributan como esclavos. En estos ponia mayordomos y recogedores y recaudadores; y aunque los señores mandaban su gente, eran debajo de la mano destos de México . . ." (Tapia 2:592).

[62] Partly for this reason, our conclusions are somewhat at variance with the interpretations of both Krickeberg (pp. 106–109) and Barlow (1947 a, map 4). For example, the latter shows a large block of territory, including the entire Papantla zone, as subjected by Ahuizotl. As far as we can tell, the only Totonac conquests he might possibly claim are "Tuzapan" and Nautla, the latter considerably to the south, on the coast. Moreover, although we conclude that the balance of northern Totonacapan succumbed during the reign of Moctezuma II, Barlow's map gives no indication of military action in this area during his rule.




Map 10.—Early Mexican wars: Acamapichtli (1370–96).

(For legend, see pp. 281–282)

*Legend to map 10*

Early Mexican wars: Acamapichtli (1370–96). In this and the legends to succeeding maps (Nos. 11–18), the data have been handled similarly. A full explanation will be given here, to avoid the necessity of repetition.

In the legends to maps 10 to 18 and in tables 16 to 20, the sources are cited in the same arbitrary sequence: Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Historia de los mexicanos por sus pinturas, Codex Telleriano-Remensis, Torquemada, Tezozomoc, Códice en Cruz, and Ixtlilxochitl. Following the latter is appended any supplementary material which has been used. Omission of one of the above sources indicates that we found in it no data pertinent to the reign under consideration.

Data concerning wars and conquests are presented in four columns. In the first is a key number, ordinarily assigned a pueblo the first time it appears on a given one of our lists. If it is possible to locate the town, the corresponding number is entered on the map. Each map, incidentally has a separate set of numbers; for example, No. 2 of the present map and of succeeding ones applies to quite different settlements.

When a given pueblo appears in sources cited subsequently in our same list, reference is made merely to key number. Thus, in the present case, the Códice Chimalpopoca gives Xochimilco as a conquest of Acamapichtli. It is third on the list below and is so numbered. The Anales de Tlatelolco speak of the subjection of the Xochimilca, obviously the people of Xochimilco. Accordingly, the identification is not repeated in the legend, but reference is made to No. 3.

The second column lists wars and conquests, as they appear in individual sources, with the orthography of the latter retained. The listing is in precisely the same order as in the respective sources, since relative position in a series sometimes is a useful clue to identification.

The third column gives the page reference; to avoid repetition, towns mentioned on the same page are grouped by brackets; the latter apply only to this column.

In the fourth and last column is given the suggested identification. When a pueblo has been identified with a still existent town, the name is given as it appears in the 1930 Federal census. For extinct pueblos, the old spelling is retained, and the name is in quotation marks. A blank in the fourth column means that we are unable to offer an identification; in such case, a discussion of the problem will be found in the numbered notes at the end of the legend.

The notes also discuss doubtful conquest. If a pueblo appears on one of our lists, unaccompanied by a note, it may be assumed that the source cited indicates clearly that the pueblo in question was a Mexican conquest.

For the early Mexican wars (maps 10–12), we have not attempted to prepare chronological tables. The latter start with Itzcoatl (map 13, table 16) and cover each subsequent reign, save that of Tizoc, whose campaigns are largely undated. When wars are reported on both map and table, as in the case of Itzcoatl, the same set of key numbers is used, to facilitate cross reference.

*Legend to map 10*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Cuauhtinchantlaca [1] | 34 | Cuautinchán, Puebla. |
| 2 | Mízquic | 66 | Mixquic, D. F. |
| 3 | Xochimilco | | Xochimilco, D. F. |
| 4 | Cuauhnáhuac [2] | | |
| 5 | Cuitláhuac | | Tlahuac, D. F. |
| | Anales de Tlatelolco: [3] | | |
| 6 | Chichimeca de Metztitlan [4] | 51 | |
| | Mizquica | 52 | See 2. |
| 7 | Chimalhuaque | | Chimalhuacán, México. |
| | Xochimilca [5] | | See 3. |
| | Quauhtinchantlaca [1] | | See 1. |
| | Cuitlahuaca | | See 5. |
| 8 | Quauácatl [6] | | |
| | Colección de Mendoza: | | |
| | Quauhnahuac | 5: 42 | See 4. |
| | Mizquic | | See 2. |
| | Cuitlhuac | | See 5. |
| | Xochimilco | | See 3. |
| | Historia de los mexicanos por sus pinturas: | | |
| | Suchimilco [7] | 229 | See 3. |
| | Mezquique | | See 2. |
| | Cuitralauaca | | See 5. |
| | Codex Telleriano-Remensis: | | |
| 9 | Chuluachan [8] | 5: 148 | Culhuacán, D. F. |
| | Ixtlilxochitl: | | |
| | Cuitlahuac [9] | 2: 70 | See 5. |
| 10 | Xaltocan [10] | 2: 77–78 | Jaltocán, México. |
| 11 | Cuauhtitlan | | Cuautitlán de Romero Rubio, México. |
| 12 | Tepotzotlan | | Tepotzotlán, México. |
| 13 | Mazahuacan [11] | 2: 78 | |

[1] At first blush, the identification may appear dubious, for Cuautinchán is far removed from the somewhat restricted zone where early Mexica operations were concentrated. However, it is fully confirmed by the Historia tolteca-chichimeca (p. 114), although the latter attributes the conquest to Tlatelolco, and the Anales de Tlatelolco (p. 52) make the same implication. The Códice Chimalpopoca (p. 34) appears to credit the conquest jointly to Tlatelolco and Tenochtitlan.

[2] The obvious identification would be Cuernavaca, in modern Morelos. However, it seems more likely that the pueblo in question is now extinct but formerly was located in the southern part of the Valley of Mexico. Both possibilities, accompanied by interrogation point, appear on the map.

Under Acamapichtli, this pueblo appears as a conquest, in both the Códice Chimalpopoca and the Colección de Mendoza; under Huitzilihuitl, in the Anales de Tlatelolco. In each of these three cases, "Cuauhnahuac" is mentioned in company with Mixquic, Xochimilco, and Tlahuac. Later, during the reign of Itzcoatl, a pueblo of similar name crops up, but in such association that reference cleary is to the well-known modern settlement in Morelos.

However, the earlier references during the reigns of Acamapichtli and Huitzilihuitl, evidently do not apply to the same pueblo. That there was more than one town of that name is obvious, for the Historia tolteca-chichimeca (p. 98) mentions a "Quauhnáuac" a day's journey from "Xiquipilco." The latter evidently is Jiquipilco, in the State of Mexico, hence identification of "Quauhnáuac "with Cuernavaca of Morelos is quite out of the question.

Kirchhoff likewise has considered the identification of this pueblo. His first inclinination (1940, p. 82) is to identify it with modern Cuernavaca; but later (1947, ftn. 3, p. xxvi) he concludes that it must be sought in the Valley of Mexico, close to Chapultepec. However, on the map accompanying his later paper, Kirchhoff places "Quauhnáuac" north of the Federal District, in the vicinity of Jiquipilco and Cuautitlán, in the State of Mexico.

We agree that a location should be sought in the Valley of Mexico but are inclined to favor the southern limits of that zone, because of the consistent association of "Cuauhnáhuac" with Xochimilco, Tlahuac, and Mixquic.

On an early sixteenth-century map attributed to Alonso de Santa Cruz (Linné, 1942), the name Cuernavaca, appears immediately beside Tlahuac.

[3] Except for the Chichimecs, the Anales de Tlatelolco do not state explicitly that the pueblos in question were conquered; the expression used is "they perished" (*perecieron*). However, most of the settlements mentioned are listed as conquests in other sources, hence the implication of conquest is strong:

Mixquic: Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas.

Xochimilco: Códice Chimalpopoca, Colección de Mendoza.

Cuautinchán: see footnote 1.

Tlahuac: Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas; see note 9 below.

Chimalhuacán: not confirmed in other sources.

"Quauácatl": see footnote 6, below.

[4] Not shown on our map. The Anales de Tlatelolco refer to the defeat of a group of Chichimecs, which Ixtlilxochitl (2: 77) calls Otomís. Following the defeat, they withdrew to Metztitlán, in modern Hidalgo. Ixtlilxochitl (2: 77–78) himself states that the Mexicans participated in this war as allies of Azcapotzalco, to which they were tributary.

[5] The Anales de Tlatelolco imply that the war against Xochimilco was waged by Tlatelolco, for, at the conclusion, captives were sacrificed at the inauguration of a temple there. Nevertheless, the Códice Chimalpopoca, the Colección de Mendoza, and the Historia de los mexicanos por sus pinturas attribute this war to Mexico-Tenochtitlan.

[6] Not identified, but presumably close to the modern City of Mexico. Sahagún (3: 175) speaks of "... el lugar de esta laguna que llaman *Quauhacalco*, que es la fuente que viene al *Tlatilulco*"; and Ixtlilxochitl (2: 91) mentions a resort called "Quauhyacac," which was popular with Texcocan rulers. Our source is not explicit; this conquest may be attributable to Tlatelolco alone, or to Tlatelolco-Tenochtitlan jointly.

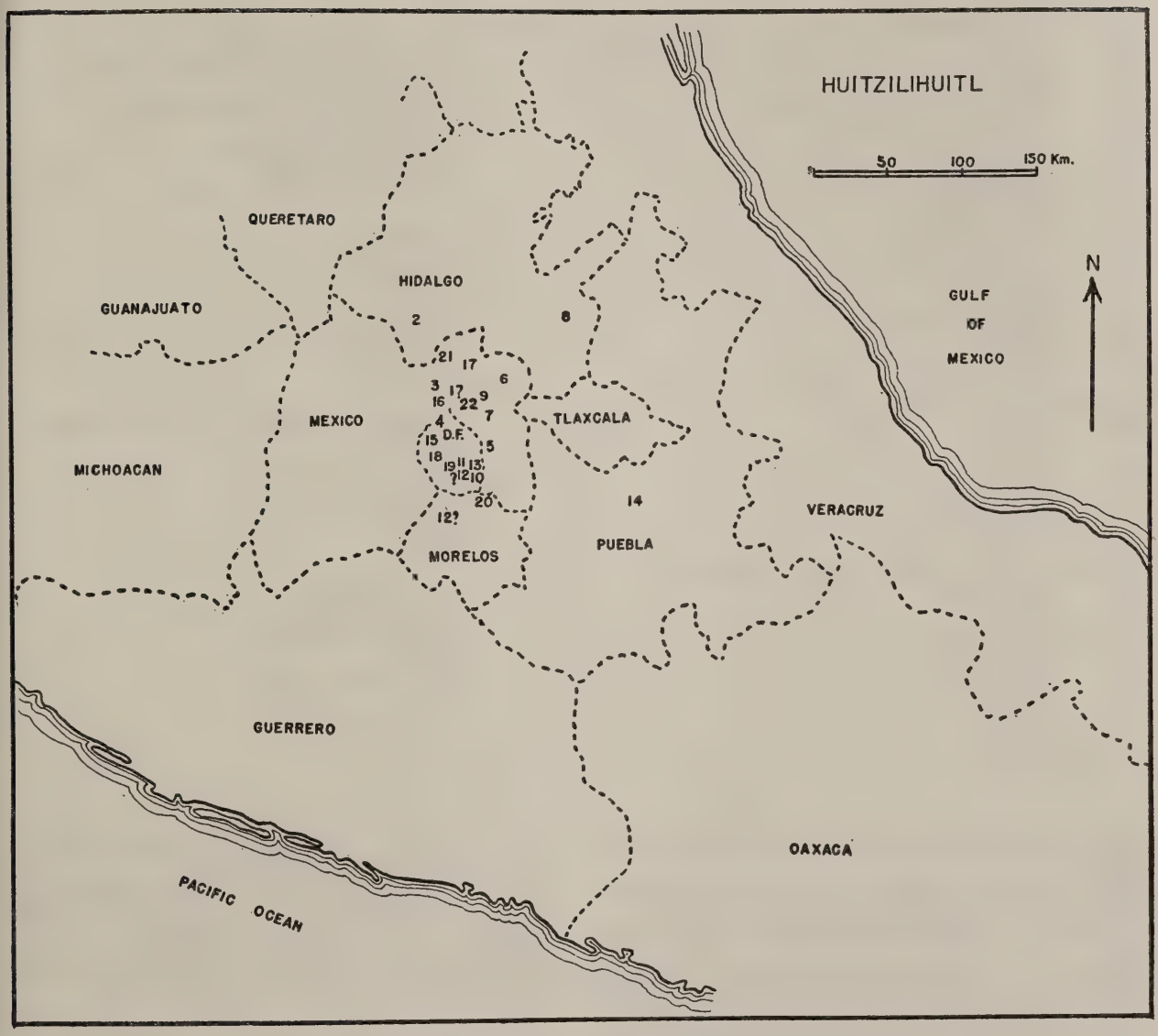
[7] Indication of conquest is not clear in the Historia de los mexicanos por sus pinturas but is confirmed by both the Códice Chimalpopoca and the Colección de Mendoza.

[8] Indication of conquest is far from clear in the Codex Telleriano-Remensis, and we do not find confirmation in other sources. The Codex suggests that the Mexicans took the city, fired the temple, but were unable to keep Culhuacán in the role of tributary. This may have been the beginning of the series of struggles between Tenochtitlan and Culhuacán.

[9] Ixtlilxochitl states that Tlahuac belonged to the Mexica but was subjected anew, following an uprising. He indicates that the war was waged by the Mexicans in their role of vassals of Azcapotzalco.

[10] According to Ixtlilxochitl, Azcapotzalco, with the assistance of Tenochtitlan, bore down on the "kingdom of the Otomís," including Jaltocán, Cuautitlan, and Tepozotlán. After their defeat, the Otomí retired to Metztitlán, and as a reward for their assistance, the Mexicans received several unspecified "pueblos and places." This war evidently is the same as that mentioned above, in footnote 4.

[11] Not shown on our map. Reference is to the territory inhabited by the Mazahua, west and northwest of the present Federal District.




MAP 11.—Early Mexican wars: Huitzilihuitl (1396–1417).

(For legend, see p. 284)

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*Legend to map 11*

Early Mexican wars: Huitzilihuitl (1396–1417). See legend to map 10.

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Tepanohuayan [1] | 36 | |
| 2 | Tollan | | Tula de Allende, Hidalgo. |
| 3 | Cuauhtitlan | | Cuautitlán de Romero Rubio, México. |
| 4 | Azcapotzalco [2] | | Azcapotzalco, D. F. |
| 5 | Chalco [3] | | Tlalmanalco de Velázquez, México. |
| 6 | Otompan | 66 | Otumba, México. |
| 7 | Acolhuacan [4] | | Texcoco de Mora, México. |
| 8 | Tollantzinco [5] | | Tulancingo, Hidalgo. |
| 9 | Acolman | | San Bartolo Acolman, México. |
| | Anales de Tlatelolco: | | |
| 10 | Mizquícatl | | Mixquic, D. F. |
| 11 | Xochimílcatl | | Xochimílco, D. F. |
| 12 | Cuauhnauácatl [6] | 15 | |
| 13 | Cuitlauácatl | | Tlahuac, D. F. |
| | Tepanouaya [1] | 16 | See 1. |
| 14 | Quauhtinchantlaca [7] | | Cuautinchán, Puebla. |
| 15 | Coyoacan [8] | 53 | Coyoacán, D. F. |
| | Chalca [3] | | See 5. |
| | Tollantzinca [5] | 54 | See 8. |
| | Colección de Mendoza: | | |
| 16 | Toltitlan | | Tultitlán de Mariano Escobedo, México. |
| | Quauhtitlan | | See 3. |
| | Chalco | | See 5. |
| | Tulancingo | | See 8. |
| 17 | Xaltocan | 5:43 | Jaltocán, México. |
| | Otumpa | | See 6. |
| | Tezcuco Cabda | | See 7. |
| | Acolma | | See 9. |
| | Historia de los mexicanos por sus pinturas: | | |
| 18 | Cuaximalpan | | Cuajimalpa, D. F. |
| 19 | Capiscla | | Santa Cruz Acalpixca, D. F. |
| 20 | Cuauximilco [9] | | Coajomulco, Morelos. |
| | Chalco [3] | 229 | See 5. |
| 21 | Tezquiaque | | Tequixquiac, México. |
| | Tazcuco [4] | | See 7. |
| 22 | Tepepan [10] | | Tepexpam, México. |
| | Torquemada: | | |
| | Acolhuaques [4] | 1: 107 | See 7. |
| | Ixtlilxochitl: | | |
| | Tetzcuco [4] | 2: 104 | See 7. |

[1] Pueblo not identified; but in the list of conquests attributed to Itzcoatl, Ixtlilxochitl (2: 151) cites it in such manner as to suggest the location shown on our map.

Neither the Códice Chimalpopoca nor the Anales de Tlatelolco indicates definitive conquest of this town; both say merely that Mexican warriors and those of "Tepanohuayan" battled and that the latter were defeated.

[2] The inclusion of Azcapotzalco in this list of Mexican conquests is difficult to understand, since the Mexicans still were tributary to that Tepanecan center.

Possibly the source indicates merely that the Mexicans participated in a battle in Azcapotzalco, as allies—perhaps when the city was besieged by Texcoco (Ixtlilxochitl 2: 86–87). In other words, the record may be interpreted as a battle, not as a conquest. Not until the days of Itzcoatl did the Mexicans free themselves of Azcapotzalco and conquer that city.

[3] "Chalco" has been identified with modern Tlalmanalco, in accord with Torquemada (1: 116), who notes that the ancient province of "Chalco" was known to the Spaniards as Tlalmanalco, while the old name was retained by ". . . un Pueblo, que está Veras de la Laguna, que por estár en aquel lugar, se llama Chalcoatenco."

The Anales de Tlatelolco state merely that "se sublevaron los chalca," but conquest is confirmed by the Colección de Mendoza and the Historia de los mexicanos por sus pinturas.

[4] "Acolhuacan," or Texcoco (Sahagún 1: 79, 2: 285–286) appears among the conquered pueblos, since it was subdued by Azcapotzalco with the assistance of the Mexicans (Ixtlilxochitl 2: 99; Torquemada 1: 107–108). The conquest is confirmed by the Colección de Mendoza, the Historia de los mexicanos por sus pinturas, Torquemada, and Ixtlilxochitl.

Nevertheless, Ixtlilxochitl (2: 104) places the fall of Texcoco during the reign of the succeeding leader, Chimalpopoca, who received the town from the hands of the ruler of Azcapotzalco. Torquemada appears somewhat dubiously to agree; the Historia de los mexicanos por sus pinturas has Texcoco conquered both in the days of Huitzilihuitl and Chimalpopoca.

[5] Tulancingo, part of the Texcocan realm, fell into the hands of Azcapotzalco. Probably Mexican warriors participated, but Tezozomoc, the ruler of Azcapotzalco, reserved for himself the stretch of land from "the limits of 'Chalco' to those of Tulancingo" (Ixtlilxochitl 2: 103–104).

The Anales de Tlatelolco (p. 54) place the conquest of Tulancingo during the inter-regnum between Huitzilihuitl and Chimalpopoca, although in another passage (p. 16), they list Tulancingo among the conquests of Chimalpopoca, as does the Historia de los mexicanos por sus pinturas.

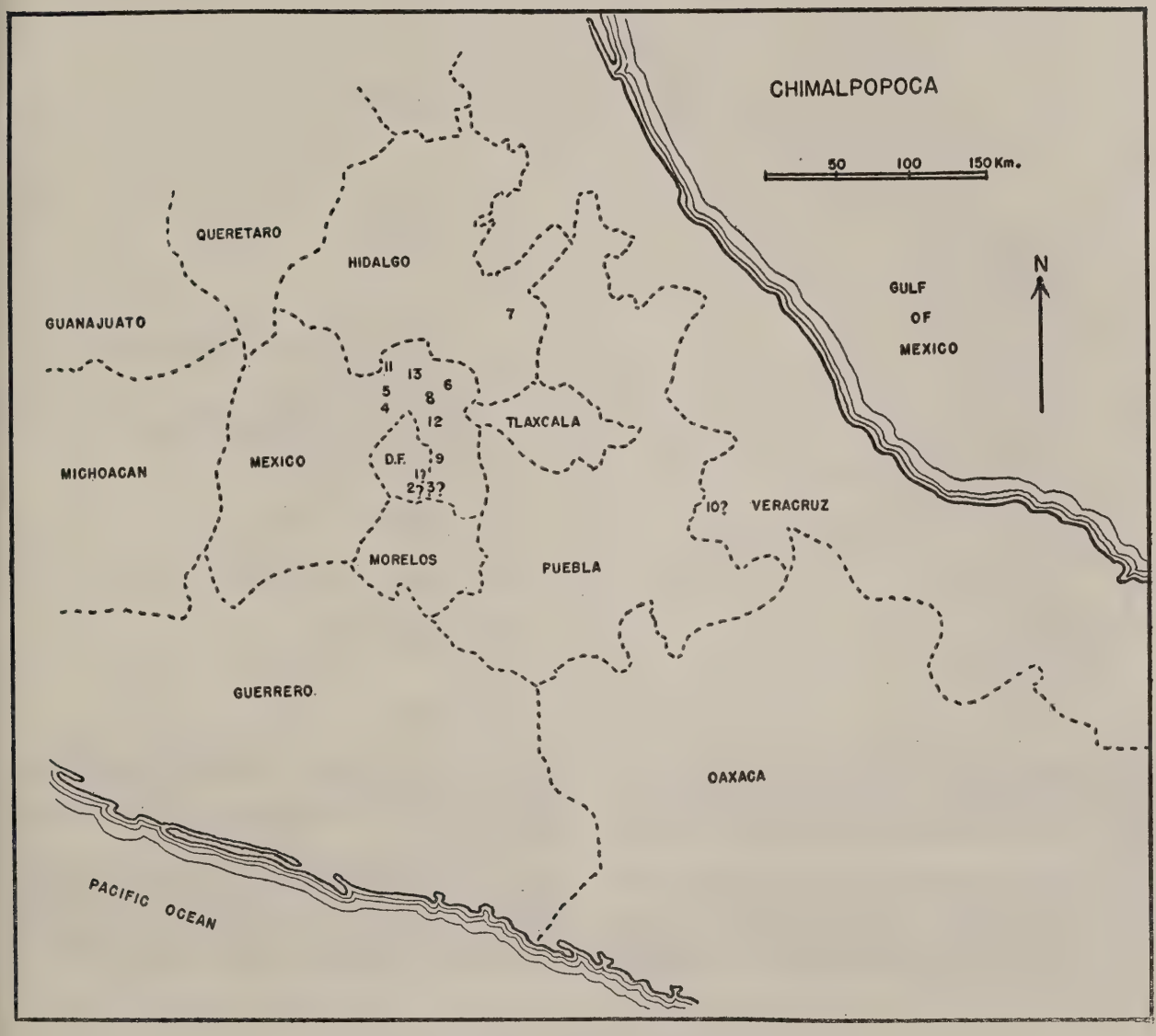
[6] See footnote 2, map 10.

[7] The Anales de Tlatelolco state merely that the inhabitants of Cuautinchán "perished." This we have interpreted as conquest, despite want o confirmation by other sources.

[8] The Anales de Tlatelolco report war, but not Mexican conquest; in fact, they remark that the Mexicans did not fare well in the encounter with Coyoacán.

[9] According to the Historia de los mexicanos por sus pinturas, Coajomulco was part of the "Chalco" domain and was conquered in the course of war with the latter pueblo (see footnote 3, above).

[10] "Tepepan," part of the Texcocan realm (Historia de los mexicanos por sus pinturas, p. 229), was the first Texcocan pueblo conquered by the Mexicans (see footnote 4, above). This pueblo could be identified with the existing pueblo of the same name in the Federal District. However, in view of the general location in which this war between Texcoco and Azcapotzalco took place, identification with Tepexpam, in the modern State of Mexico, seems more likely.




Map 12.—Early Mexican wars: Chimalpopoca (1417–27).

(For legend, see p. 286.)

*Legend to map 12*

Early Mexican wars: Chimalpopoca (1417–27). See legend to map 10.

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Teopancalco [1] | 37 | |
| 2 | Atenchicalcan [1] | | |
| 3 | Tecpan [1] | | |
| | Anales de Tlatelolco: | | |
| 4 | Toltitlan | 16 | Tultitlán de Mariano Escobedo, México. |
| 5 | Quauhtitlan | | Cuautitlán de Romero Rubio, México. |
| 6 | Otompan | | Otumba, México. |
| 7 | Tollantzinco [2] | | Tulancingo, Hidalgo. |
| 8 | Acolman | | San Bartolo Acolman, México. |
| 9 | Chalca [3] | | Tlalmanalco de Velázquez, México. |
| 10 | Auilizapaneca [4] | 54 | Orizaba, Veracruz. |
| | Toltitlancalque [5] | 55 | See 4. |
| | Colección de Mendoza: | | |
| 11 | Tequixquiac | 5:43 | Tequixquiac, México. |
| | Chalco [3] | | See 9. |
| | Historia de los mexicanos por sus pinturas: | | |
| 12 | Tezcuco [6] | 229 | Texcoco de Mora, México. |
| | Tulancingo [2] | | See 7. |
| | Torquemada: | | |
| 13 | Xaltocán [7] | 1:107 | Jaltocán, México. |
| | Tetzcuco [6] | 1:114 | See 12. |
| | Códice en Cruz.[8] | | |
| | Ixtlilxochitl: | | |
| | Tetzcuco [6] | 2:104 | See 12. |

[1] These three towns were given Chimalpopoca by Tezozomoc, ruler of Azcapotzalco, probably as a reward for Mexican participation in the war with Texcoco (Códice Chimalpopoca, p. 37). Since mention is made of "los cuitlahuacas de Teopancalco, de Atenchicalcan y Tecpan, tres lugares juntos" (pp. 37, 62), we have located the pueblos near modern Tlahuac. Elsewhere (p. 51), the Códice Chimalpopoca tends to confirm such a location for "Atenchicalcan."

[2] See footnote 5, map 11.

[3] The Anales de Tlatelolco suggest war followed by conquest; the Colección de Mendoza explains that "Chalco" was subdued after an uprising.

[4] Orizaba is remote from the field of action, yet no other identification seems likely. It is barely possible that Orizaba was involved in the Texcoco-Azcapotzalco war (see footnote 4, map 11), in which the Mexicans participated. Upon occasion, Orizaba and Tlaxcala collaborated as allies (p. 271), at least in theory, and we know that Tlaxcala was friendly with Texcoco (Ixtlilxochitl 2: 135; Códice Chimalpopoca, p. 46).

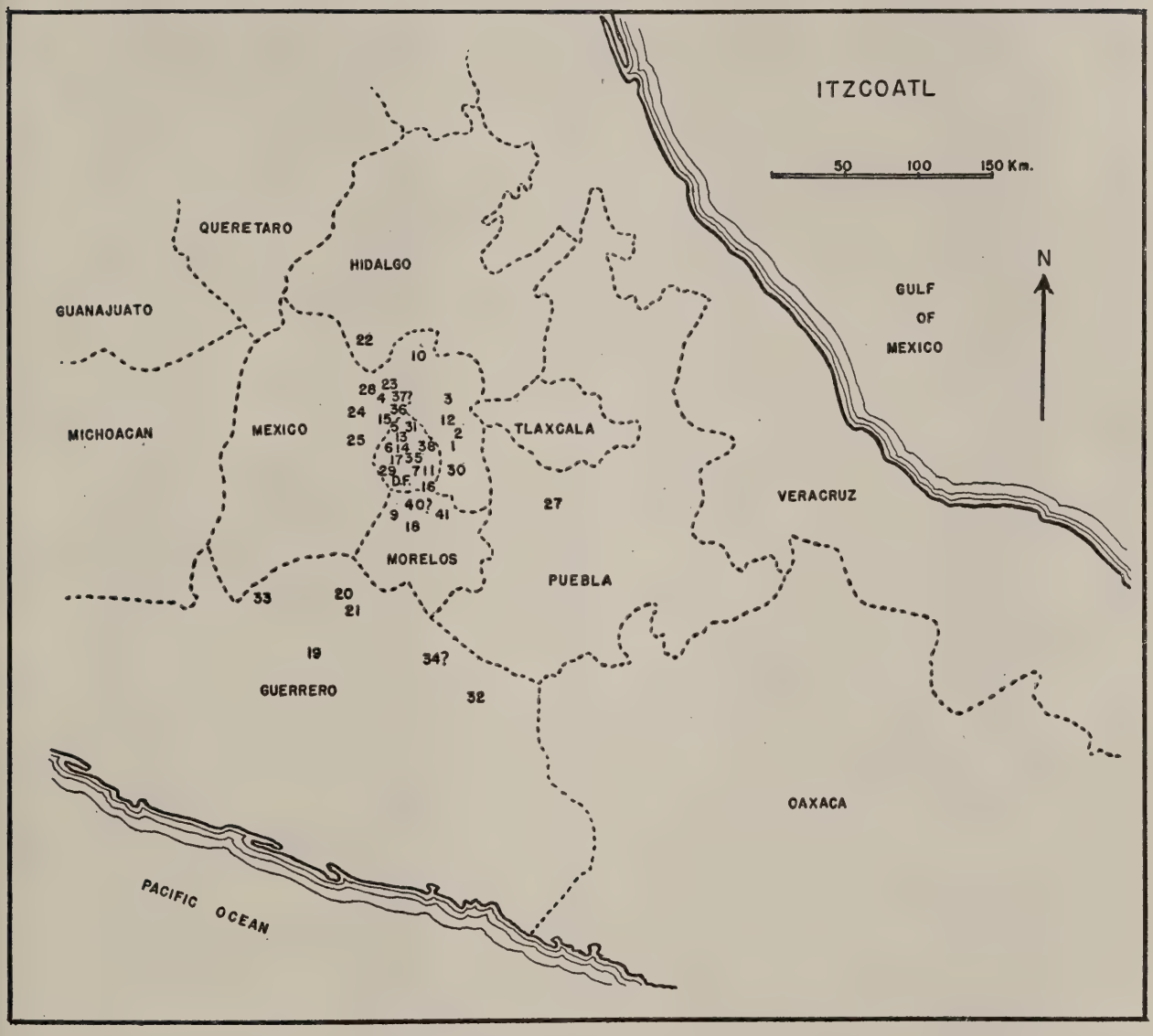
The Anales de Tlatelolco state merely that the inhabitants of Orizaba perished—a phrase we have taken as connoting conquest, despite want of confirmation by other sources.

[5] The Anales de Tlatelolco state that those of Tultitlán perished—an expression we interpret as indicating conquest; elsewhere (p. 16), the same source confirms the conquest.

[6] See footnote 4, map 11.

[7] Torquemada (1: 107) reports a rebellion in Jaltocán, and suggests that the Mexicans, as vassals of Azcapotzalco, may have participated in its subjugation. However, this campaign under Chimalpopoca is not confirmed in other sources. Possibly, it took place during the previous reign, and the chronological confusion Torquemada displays concerning this period (see footnote 4, map 11), has led him to place it during the era of Chimalpopoca.

[8] Dibble (pp. 23–24) interprets the Códice en Cruz as recording a war between Azcapotzalco and Texcoco (see footnote 4, map 11.)




Map 13.—Mexican wars: Itzcoatl (1427–40).

(For legend, see pp. 288–290.)

*Legend to map 13*

Mexican wars: Itzcoatl (1427–40). See legend to map 10.

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Cohuatlychan [1] | | San Miguel Coatlinchán, México. |
| 2 | Huexotla [1] | | Huexotla, México. |
| 3 | Acolman [1] | | San Bartolo Acolman, México. |
| 4 | Toltitlan [1] | 47 | Tultitlán de Mariano Escobedo, México. |
| 5 | Azcapotzalco [1] | | Azcapotzalco, D. F. |
| 6 | Coyohuacan [1] | | Coyoacán, D. F. |
| 7 | Xochimilco [1] | | Xochimilco, D. F. |
| 8 | Tepanecas [2] | | |
| 9 | Cuauhnahuacas [3] | 48 | Cuernavaca, Morelos. |
| 10 | Xaltocamecas [3] | | Jaltocán, México. |
| 11 | Cuitlahuacas [4] | 49–50 | Tlahuac, D. F. |
| | Azcapotzalco [5] | | See 5. |
| 12 | Acolhuacan [6] | | Texcoco de Mora, México. |
| 13 | Tlacopan [6] | | Tacuba, D. F. |
| 14 | Atlacuiyan | | Tacubaya, D. F. |
| 15 | Teocalhuiyacan | | Los Remedios, México. |
| 16 | Mízquic | | Mixquic, D. F. |
| | Cuitláhuac | | See 11. |
| | Xochimilco | | See 7. |
| | Coyohuacan | | See 6. |
| 17 | Mixcóhuac | 66 | Mixcoac, D. F. |
| | Tetzcoco | | See 12. |
| | Cuauhnáhuac [3] | | See 9. |
| 18 | Xiuhtépec | | Jiutepec, Morelos. |
| 19 | Cueçallan | | Cuetzala del Progreso, Guerrero. |
| 20 | Yohuallan | | Iguala, Guerrero. |
| 21 | Tepequacuilco | | Tepecoacuilco de Trujano, Guerrero. |
| 22 | Tollan | | Tula de Allende, Hidalgo. |
| 23 | Cuauhtitlan | | Cuautitlán de Romero Rubio, México. |
| 24 | Tecpan | | San Miguel Tecpan, México. |
| 25 | Huizitzillapan | | San Lorenzo Huitzizilapan, México. |
| | Anales de Tlatelolco: | | |
| | Tecpanécatl [7] | | See 8. |
| | Coyouaque [8] | | See 6. |
| | Acolhuaque [8] | 55 | See 12. |
| 26 | Matlatzíncatl [8, 9] | | |
| | Quauhnauácatl [3, 8] | | See 9. |
| 27 | Totomiuaque [8] | 56 | Totimehuacán, Puebla. |
| | Colección de Mendoza: | | |
| | Azcapuzala | | See 5. |
| | Coyuacan | | See 6. |
| | Teocalhueyan | | See 15. |
| 28 | Quaguacan | | Santa María Magdalena, México, formerly "Cahuacán." |
| | Tlacopan | | See 13. |
| | Atlacinhuayan | | See 14. |
| | Mixcoac | | See 17. |
| 29 | Quauximal | | Cuajimalpa, D. F. |
| | Quauhtitlan | | See 23. |
| | Tecpan | | See 24. |
| | Acolhuacan | | See 12. |
| | Mizquic | 5: 44 | See 16. |
| | Cuitlahuac | | See 11. |
| | Xodjimilco | | See 7. |
| 30 | Chalco [10] | | Tlalmanalco de Velázquez, México. |
| 31 | Tlatilulco [10] | | Tlatelolco, D. F. |
| | Huizizilapa | | See 25. |
| | Quauhnahuac [3] | | See 9. |
| | Cuezalan | | See 19. |
| 32 | Zaqualpa | | Zacualpa, Guerrero. |
| 33 | Yztepec | | Ixtepec, Guerrero. |
| | Xiuhtepec | | See 18. |
| | Yoalan | | See 20. |
| 34 | Tepequacinla [11] | | Tepetlacingo, Guerrero. |

See footnotes on pages 289–290.

*Legend to map 13*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Historia de los mexicanos por sus pinturas: | | |
| | Escapuzalco [12] | 230 | See 5. |
| | Tatilulco [10] | | See 31. |
| | Guautitlán | | See 23. |
| | Codex Telleriano-Remensis: | | |
| | Azcapucalco | 5: 149 | See 5. |
| | Torquemada: | | |
| | Azcaputzalco | 1: 142 | See 5. |
| | Huexotla | 1: 143 | See 2. |
| | Tlacubaya | 1: 144 | See 14. |
| | Coyohuacan | 1: 145 | See 6. |
| 35 | Huitzilopochco | | Churubusco, D. F. |
| | Atlacuihuayan | | See 14. |
| | Xuchimilco | 1: 148–149 | See 7. |
| | Cuitlahuac | 1: 149 | See 11. |
| | Quauhnahuac [3] | 1: 149–150 | See 9. |
| | Tultitlan | 1: 150 | See 4. |
| | Quauhtitlan | | See 23. |
| | Tezozomoc: | | |
| | Atzcaputzalco | 34 | See 5. |
| | Cuyuacan | 56 | See 6. |
| | Xochimilco | 67 | See 7. |
| | Cuitlahuac | 72–73 | See 11. |
| | Códice en Cruz: | | |
| | Tepanecas [13] | 27 | See 8. |
| | Cuauhtitlan [13] | 30 | See 23. |
| | Ixtlilxochitl: | | |
| | Azcaputzalco | 2: 151 | See 5. |
| | Coyohuacan | | See 6. |
| | Tlacopan | | See 13. |
| 36 | Tenayocan | | San Bartolo Tenayucan, México. |
| 37 | Tepanoaya [14] | | |
| | Toltitlan | | See 4. |
| | Quauhtitlan | | See 23. |
| | Xaltocan [3] | | See 10. |
| | Huitzilopochco | | See 35. |
| 38 | Colhuacan | | Culhuacán, D. F. |
| | Tetzcuco | 2: 151–152 | See 12. |
| | Xochimilco [15] | 2: 152 | See 7. |
| | Cuitlahuac [15] | | See 11. |
| 39 | Tlalhuicas [16, 17] | 2: 196 | |
| 40 | Tepozotlan [18] | | Tepoztlán, Morelos. |
| 41 | Huaxtepec | | Oaxtepec, Morelos. |
| | Chalco [10, 19] | | See 30. |
| | Itzocan [19] | | |
| | Tepecyacan [19] | | |
| | Tecalco [19] | | |
| | Teohuacan [19] | | |
| | Coaixtlahuacan [19] | | |
| | Cuetlachtlan [19] | | |
| | Hualtepec [19] | | |
| | Quauhtochco [19] | | |
| | Mazahuacan [19] | 2: 198 | |

[1] Each of these seven towns was conquered by Netzahualcoyotl of Texcoco, in the course of the war he waged with Azcapotzalco, in order to recover his domain. Itzcoatl assisted him in this enterprise.

Of the seven pueblos, only the conquest of Azcapotzalco is not entirely clear (Códice Chimalpopoca, p. 47), although the implication is strong. However, the conquest is confirmed elsewhere (p. 66) in the same source, and by the Colección de Mendoza, the Codex Telleriano-Remensis, Torquemada, Tezozomoc, and Ixtlilxochitl.

[2] Tepaneca is the name given to the realm which reached its greatest extent under Tezozomoc and its ruin under Maxtla. Its principal pueblo was Azcapotzalco, to which the Mexicans were tributary until the days of Itzcoatl.

Although the Códice Chimalpopoca says merely that the Tepanecas were defeated, conquest of their major holdings is corroborated, inasmuch as the seven pueblos mentioned previously (see footnote 1, above) all were part of the Tepanecan "state."

[3] The Códice Chimalpopoca states that the forces of Cuernavaca and Jaltocán were defeated, and it is quite clear, moreover, that the pueblos in question were conquered. Elsewhere (p. 66), the same source confirms the conquest of Cuernavaca, which also is recorded in the Colección de Mendoza and in Torquemada; the conquest of Jaltocán is reported by Ixtlilxochitl.

In this case, identification of Cuernavaca is well confirmed. The Códice Chimalpopoca mentions it with Jiutepec, also in the modern State of Morelos, and in the Colección de Mendoza it appears in company with pueblos in the State of Guerrero. Moreover, Torquemada's account of the campaign leaves little doubt that the town known today as Cuernavaca is indicated.

According to the Códice Chimalpopoca (p. 48), Cuautitlán figured in this war as an ally of Tenochtitlan and Texcoco.

[4] The Códice Chimalpopoca reports that the Mexicans fought the "Cuitlahuacas" for 3 years without victory. However, elsewhere (p. 66), the same source lists Tlahuac among the conquered pueblos, and its subjection is con-

*Legend to map 13*—Continued

firmed by the Colección de Mendoza, Torquemada, and Tezozomoc. See also footnote 15, below.

[4] Before it lists the conquests of Itzcoatl, starting with Azcapotzalco, the Códice Chimalpopoca (p. 66) refers ambiguously to "Chalco," saying: "Este Itzcohuatzin otra vez se aplicó la ciudad de Chalco." It adds that Itzcoatl was responsible for the death of the ruler of Tlatelolco. Since in neither case is there definite mention of war, much less of conquest, the pueblos in question have not been included in our list.

Two sources (Colección de Mendoza, Historia de los mexicanos por sus pinturas) have Tlatelolco subjected by Itzcoatl. The same is said of "Chalco" (Colección de Mendoza, Ixtlilxochitl).

Nevertheless, it appears that "Chalco" was not definitely subdued until the reign of Moctezuma I, and Tlatelolco, until that of his successor, Axayacatl.

[5] It is not surprising to find "Acolhuacan"-Texcoco and Tacuba among the Mexican conquests—in spite of the alliance between Netzahualcoyotl and Itzcoatl, and in spite of the fact that somewhat later Tacuba was a member of the Triple Alliance.

In order for Netzahualcoyotl to recuperate his power, he and Itzcoatl found it necessary to conquer Texcoco itself, which had been in a state of rebellion since the fall of Azcapotzalco (Ixtlilxochitl 2: 151–152). This conquest is confirmed by the Colección de Mendoza, which also mentions that of Tacuba, as does Ixtlilxochitl. The latter (2: 151) would have the conquest purely formal since the ruler of Tacuba "de secreto favorecía el bando de Nezahualcoyotzin."

[7] The association of "Tecpanécatl" with the death of Maxtlatzin (Maxtla), ruler of Azcapotzalco (Anales de Tlatelolco, p. 55), indicates that "Tecpanécatl" refers to the Tepanecas (see footnote 2, above).

The source states that the "Tecpanécatl" "perished," which we interpret as conquest, and there is clear evidence of the conquest of the Tepaneca at this time (notes 1, 2, above).

[8] In these cases as well, the Anales de Tlatelolco use the expression, "they perished." Again, we interpret this as conquest, that of Coyoacán being confirmed by the Códice Chimalpopoca (pp. 47, 66), the Colección de Mendoza, Torquemada, Tezozomoc, and Ixtlilxochitl. The subjection of pueblos in the Matlatzinca area is reported in the Códice Chimalpopoca and the Colección de Mendoza. With respect to Cuernavaca, see footnote 3 above; and Texcoco footnote 6.

The suppo sed conquest of Totimehuacán appears not to be confirmed.

[9] The people known as Matlatzinca are found today in the vicinity of the Valley of Toluca, and thence south and west approximately to the modern limits between Mexico and Morelos, Guerrero and Michoacán. Since a province rather than a pueblo is involved, No. 26 is not shown on our map.

[10] See footnote 5, above.

[11] The name, "Tepequacinla," is somewhat reminiscent of that of a town of northeast Guerrero, with which we hesitantly have identified the conquest. It is situated, incidentally, in a zone where Itzcoatl was particularly active.

[12] The Historia de los mexicanos por sus pinturas mentions a war between Mexico and Azcapotzalco. The date (table 16), suggests that the hostilities are those mentioned above, in footnotes 1 and 2.

[13] Dibble's interpretation (pp. 27, 30–31) of the Códice en Cruz is dubious, being based on evidence from other sources.

[14] Not identified; the sequence of pueblos suggests a location between Tenayucan and Tultitlán.

[15] According to Ixtlilxochitl, Netzahualcoyotl and Itzcoatl gave orders to reduce these two pueblos. The conquest of Tlahuac is reported elsewhere (see footnote 4, above), as is that of Xochimilco (Códice Chimalpopoca, Colección de Mendoza, Torquemada, Tezozomoc).

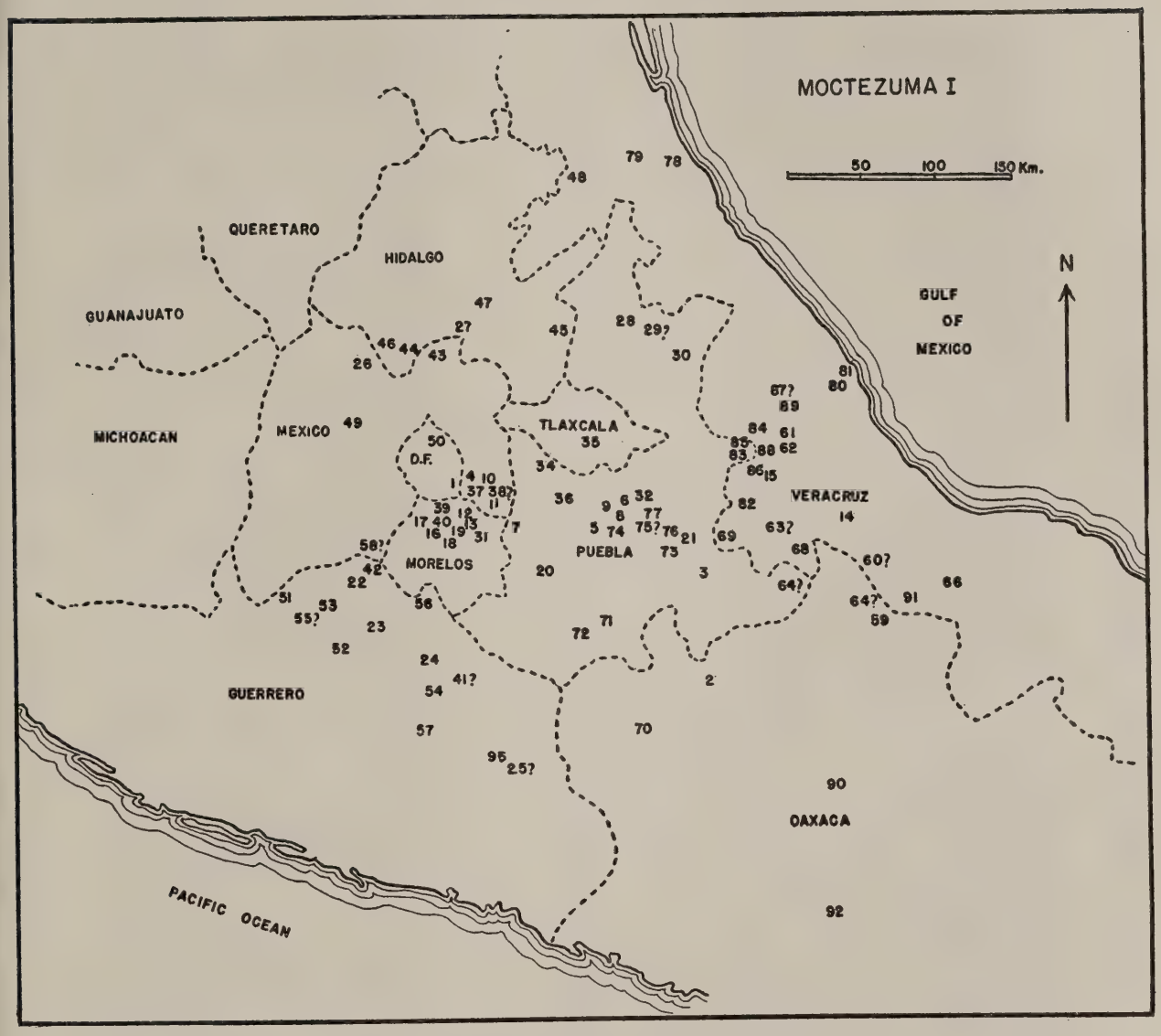
[16] Not shown on our map. Tlalhuica refers to a group of people of Nahua speech, living south of the Federal District, principally in the present State of Morelos. Conquered pueblos in the Tlalhuica zone (Nos. 9, 18, 40, 41) appear in the Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Torquemada, and Ixtlilxochitl.

[17] According to Ixtlilxochitl (2: 196), Netzahualcoyotl reestablished Texcocan dominion over Tulancingo, Huauchinango, "Jicotepec" (Villa Juárez), and the sierra Totonac, before the Triple Alliance bore down on the Tlalhuica.

[18] Modern Tepotzotlán lies north of the Valley of Mexico, in the State of Mexico. We suspect, however, that Ixtlilxochitl refers not to this pueblo, but to Tepoztlán, in modern Morelos; he himself places the conquered town in the Tlalhuica zone.

[19] Of the block of pueblos to which footnote 19 refers, most are considered by other sources to be conquests of Moctezuma I. An exception is "Chalco" (see footnote 5, above) and possibly "Mazahuacan," which may refer to the conquest of various pueblos in the Mazahua zone, such as Nos. 24 and 25 (Códice Chimalpopoca, Colección de Mendoza).

Ixtlilxochitl alone appears to place these conquests during the reign of Itzcoatl; since he runs contrary to other sources, the pueblos he enumerates have not, with exception of "Chalco," been assigned numbers, nor have they been included on map 13. We have taken the liberty of considering them among the conquests of Moctezuma I (map 14).




Map 14.—Mexican wars: Moctezuma I (1440–69).

(For legend, see pp. 292-295.)

*Legend to map 14*

Mexican wars: Moctezuma I (1440–69). See legend to map 10.

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Cuitlahuacas [1] | 51 | Tlahuac, D. F. |
| 2 | Cohuayxtlahuacan | 52 | San Juan Bautista Coixtlahuaca, Oaxaca. |
| 3 | Atezcahuacan [2] | | Tehuacán, Puebla. |
| 4 | Chalco [3] | 53 | Tlalmanalco de Velázquez, México. |
| 5 | Huehuetlan [4] | | Huehuetlán el Chico, Puebla. |
| 6 | Tepeyacahuacas | | Tepeaca, Puebla. |
| 7 | Coatépec | | Coatepec, Puebla. |
| 8 | Tecalco [4a] | 54 | Tecali de Herrera, Puebla. |
| 9 | Cuauhtinchan [5] | | Cuautinchán, Puebla. |
| | Chalco [3] | | See 4. |
| 10 | Chiconquiyauhco | | Chiconquiahuitl, México |
| 11 | Mamalhueyocan | | Santiago Mamalhuazuca, México. |
| 12 | Totollapan | | Totolapan, Morelos. |
| 13 | Atltlatlauhyan | | Atlatlahucan, Morelos. |
| 14 | Cuetlaxtlan | | Cotaxtla, Veracruz. |
| 15 | Cuauhtochco | | Huatusco de Chicuéllar, Veracruz. |
| | Cohuayxtlahuacan | | See 2. |
| 16 | Xiuhtépec | | Jiutepec, Morelos. |
| 17 | Cuauhnáhuac | | Cuernavaca, Morelos. |
| 18 | Quiyauhtépec | | Yautepec, Morelos. |
| 19 | Huaxtépec | | Oaxtepec, Morelos. |
| 20 | Itzyocan | 67 | Matamoros de Izúcar, Puebla. |
| 21 | Yohualtépec | | Yehualtepec, Puebla. |
| 22 | Tlachco | | Taxco el Viejo, Guerrero. |
| 23 | Tepequacuilco | | Tepecoacuilco de Trujano, Guerrero. |
| 24 | Tlalcoçauhtitlan | | Tlalcozotitlán, Guerrero. |
| 25 | Quiyauhteopan [6] | | Cuautipan, Guerrero. |
| 26 | Xillotépec | | Jilotepec de Abasolo, México. |
| 27 | Itzcuincuitlapilco | | Itzcuinquitlapilco, Hidalgo. |
| 28 | Tlapacoyan | | Tlapacoyan, Puebla. |
| 29 | Chapolicxitla [7] | | |
| 30 | Tlatlauhquitépec | | Tlatlauquitepec, Puebla. |
| 31 | Yacapichtlan | | Yecapixtla, Morelos. |
| | Anales de Tlatelolco: | | |
| | Quauhtépec [8] | | See 7. |
| 32 | Oztotícpac [8] | 56 | Santa María Oxtotipan, Puebla. |
| 33 | Couixca [9] | | |
| | Couayxtlauaque [8] | | See 2. |
| | Quauhtochca [8] | 57 | See 15. |
| | Cuetlaxteca [8] | | See 14. |
| 34 | Uexotzíncatl [10] | | Huejotzingo, Puebla. |
| 35 | Tlaxcaltécatl [10] | 58 | Tlaxcala, Tlaxcala. |
| 36 | Chololtécatl [10] | | Cholula de Rivadabia, Puebla. |
| | Chalca [11] | | See 4. |
| | Tepeyacacalque [8] | 59 | See 6. |
| | Colección de Mendoza: | | |
| | Coayxtlahuacan | | See 2. |
| | Mamalhuaztepec | | See 11. |
| 37 | Tenanco | | Tenango del Aire, México. |
| 38 | Teteuhtepec [12] | | |
| | Chiconquiauhco | | See 10. |
| | Xiuhtepec | | See 16. |
| | Totolapa | | See 12. |
| | Chalco | | See 4. |
| | Quauhnahuac | | See 17. |
| | Atlatlauhca | 5 : 45 | See 13. |
| | Huaxtepec | | See 19. |
| | Yauhtepec | | See 18. |
| 39 | Tepuztlan | | Tepoztlán, Morelos. |
| 40 | Tepatzinco | | Tepetzingo, Morelos. |
| | Yacapichtlan | | See 31. |
| | Yoaltepec [13] | | See 21. |
| | Tlachco | | See 22. |
| | Tlalcozauhtitla | | See 24. |

See footnotes on page 295.

*Legend to map 14*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Colección de Mendoza—Continued: | | |
| 41 | Tepecuacinla [14] | | Tepetlacingo, Guerrero. |
| | Quiyauhteopan | | See 25. |
| 42 | Chontalcoatlan | | Chontalcuatlán, Guerrero. |
| 43 | Hueypuchtla | | Hueypoxtla, México. |
| 44 | Atotonilco | | Atotonilco Tula, Hidalgo. |
| 45 | Axocopan | | Xocopa, Hidalgo. |
| 46 | Tulan | | Tula de Allende, Hidalgo. |
| | Xilotepec | 5:45 | See 26. |
| | Yzcuincuitlapilco | | See 27. |
| 47 | Atotomilco | | Atotonilco el Grande, Hidalgo. |
| | Tlapacoyom | | See 28. |
| | Chapolycxitla | | See 29. |
| | Tlatlauhquitepec | | See 30. |
| | Cuetlaxtlan | | See 14. |
| | Quauhtochco | | See 15. |
| | Historia de los mexicanos por sus pinturas: | | |
| | Cuaistrauaca | 231 | See 2. |
| | Cuetlastla | | See 14. |
| | Codex Telleriano-Remensis: | | |
| 48 | Chicoaque [36] | 5: 150 | Chicontepec, Veracruz. |
| | Coatlaxtla | | See 14. |
| 49 | Coyxiquipilco [15] | | Jiquipilco el Viejo, México. |
| | Chalco [3] | 5: 151 | See 4. |
| | Tlaxcatlecas [16] | | See 35. |
| | Torquemada: | | |
| | Chalcas [17] | 1: 153 | See 4. |
| 50 | Tlatilulcas [18] | | Tlatelolco, D. F. |
| | Cohuixcas | | See 33. |
| 51 | Oztomantlacas [19] | | "Oztuma," Guerrero. |
| 52 | Cueçaltecas | | Cuetzala del Progreso, Guerrero. |
| 53 | Ichcateupantecas | | Ixcateopan, Guerrero. |
| 54 | Teoxahualcas | 1: 157 | Teohaxtitlán, Guerrero. |
| 55 | Poctepecas [20] | | Pochote, Guerrero. |
| | Tlachco | | See 22. |
| 56 | Tlachmalac | | Tlaxmalac, Guerrero. |
| 57 | Chilapanecas | | Chilapa, Guerrero. |
| | Quauhteopan | | See 25. |
| 58 | Tçumpahuacan [21] | | Zumpahuacán, México. |
| | Chalcas | 1: 158 | See 4. |
| | Cohuaixtlahuacan | 1: 159–160 | See 2. |
| | Tlaxcaltecas [22] | | See 35. |
| | Huexotcincas [22] | | See 34. |
| 59 | Tochtepec [36] | | San Juan Bautista Tuxtepec, Oaxaca. |
| 60 | Tepçol [23] | | |
| 61 | Tzapotla | 1: 160 | Zapotitla, Veracruz. |
| 62 | Tototlan | | Totutla, Veracruz. |
| 63 | Tlatlactetelco [24] | | "Tatatelco," Veracruz. |
| 64 | Chinantla [25] | | |
| 65 | Quauhnochco [26] | | |
| 66 | Coçamalotecas | | Cosamaloapan de Carpio, Veracruz. |
| | Quauhtochco | | See 15. |
| | Chalcas | | See 4. |
| | Cuetlaxtlan | 1: 161 | See 14. |
| | Tlaxcaltecas [10] | | See 35. |
| | Huexotcincas [10] | | See 34. |
| | Chololtecas [10] | | See 36. |
| | Chalcas | 1: 163 | See 4. |
| | Tepeaca | | See 6. |
| 67 | Cuextlan [27] | | Tlacuilola, Veracruz. |
| 68 | Tlahuitolan | | Coxolitla, Veracruz. |
| 69 | Coxolitlan | | San Juan Tamazola, Oaxaca. |
| 70 | Tamaçolan | 1: 164 | Acatlán de Osorio, Puebla. |
| 71 | Acatla | | Piaxtla, Puebla. |
| 72 | Piaztlan | | San Gabriel Tetzoyocan, Puebla. |
| 73 | Tetlcoyocan | | Jilotepec, Puebla. |
| 74 | Xilotepec | | |
| 75 | Toçoco [28] | | |

See footnotes on page 295.

*Legend to map 14*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Tezozomoc: | | |
| | Chalco [3] | 99 | See 4. |
| | Tepeaca | 100 | See 6. |
| 76 | Tecamachalco | | Tecamachalco, Puebla. |
| | Tepeaca | | See 6. |
| | Tecalco | 102 | See 8. |
| | Cuauhtinchan | | See 9. |
| 77 | Acatcinco | | Acatzingo de Hidalgo, Puebla. |
| | Tziccoac | 105 | See 48. |
| 78 | Tuzpa [36] | | Tuxpan, Veracruz. |
| 79 | Tamachpa | 106 | Temapache, Veracruz. |
| 80 | Zempoala [29] | 122 | "Cempoala," Veracruz. |
| 81 | Quiahuiztlan [29] | | "Quiahuixtlan," Veracruz. |
| 82 | Ahuilizapan | | Orizaba, Veracruz. |
| 83 | Chichiquilan | | Chichiquila, Puebla. |
| 84 | Teoyzhuacan | | Ixhuacán de los Reyes, Veracruz. |
| 85 | Quimichtlan | | Quimixtlán, Puebla. |
| 86 | Tzactlan | 128 | Zacatla, Veracruz. |
| 87 | Macuixochitlan [30] | | |
| 88 | Tlatictlan | | Tetitlán, Veracruz. |
| 89 | Ozeloapan [30a] | | "Oceloapan," near Puente Nacional, Veracruz. |
| | Cuetlaxtlan | | See 14. |
| | Coayxtlahuacan | 135 | See 2. |
| 90 | Huaxaca [31] | 137 | Oaxaca, Oaxaca. |
| | Ahuilizapan | | See 82. |
| | Teoyzhuacan | | See 84. |
| | Chichiquilan | | See 83. |
| | Quimichtlan | | See 85. |
| | Macuilxochitlan | 145 | See 87. |
| | Tlactitlan | | See 88. |
| | Ozeloapan | | See 89. |
| | Cuetlaxtlan | | See 14. |
| | Huaxaca | 160 | See 90. |
| 91 | Otlatlan | | Otatitlán, Veracruz. |
| 92 | Miahuatecas | 161 | San Andrés Miahuatlán, Oaxaca. |
| | Códice en Cruz: | | |
| | Chalco [3] | 44 | See 4. |
| | Quauhteopan [32] | 51 | See 25. |
| | Coaixtlahuacan [32] | 52 | See 2. |
| | Chalco [3] | 53 | See 4. |
| | Ixtlilxochitl: | | |
| 93 | Tlalhuicas [33] | | |
| | Tepozotlan [34] | | See 39. |
| | Huaxtepec | | See 19. |
| | Chalco [35] | | See 4. |
| | Itzocan [35] | | See 20. |
| | Tepecyacan [35] | 2: 196 | See 6. |
| | Tecalco [35] | | See 8. |
| | Teohuacan [35] | | See 3. |
| | Coaixtlahuacan [35] | | See 2. |
| | Cuetlachtlan [35] | | See 14. |
| | Hualtepec [35] | | See 21. |
| | Quauhtochco [35, 36] | | See 15. |
| 94 | Mazahuacan [37, 38] | | |
| | Tlapacoyan [38] | 2: 198 | See 28. |
| | Tlauhcocautitlan [38] | | See 24. |
| | Cohuixco | | See 33. |
| | Oztoman | | See 51. |
| | Quezaltepec | | See 52. |
| | Ixcateopan | | See 53. |
| | Teozcahualco | | See 54. |
| | Poctepec | 2: 201 | See 55. |
| | Tomazolapan | | See 70. |
| | Chilapan | | See 57. |
| | Quiauhteopan | | See 25. |
| 95 | Ohuapan | | Ocuapa, Guerrero. |
| | Tzompahuacan | | See 58. |
| | Cozamaloapan | | See 66. |

See footnotes on page 295.

*Legend to map 14*—Continued

[1] The Códice Chimalpopoca mentions war with Tlahuac, in the course of which the Mexicans took the city. Nevertheless, Tlahuac does not appear in other lists of conquests. It may be that the war reported by the Códice Chimalpopoca was merely a byproduct of the Triple Alliance aggressions against "Chalco," in the course of which the Mexican troops forced their way through Tlahuac (Torquemada 1: 151).

[2] The Códice Chimalpopoca states merely, "fueron a combatir a Atezcahuacan." But the conquest of Tehuacán is confirmed by Ixtlilxochitl (2: 196), although he attributes it to Itzcoatl (see footnote 19, map 13).

[3] The Códice Chimalpopoca (p. 53) appears to indicate that, following a long period of wars with "Chalco," the latter finally was subjected by the Triple Alliance, under Moctezuma I (see footnotes 3, 9, map 11; footnote 3, map 12; footnote 5, map 13).

The conquest appears to be confirmed elsewhere (p. 67) in the same source, as well as in the Colección de Mendoza, the Codex Telleriano-Remensis, Tezozomoc, Códice en Cruz, and Ixtlilxochitl. The latter, however, places the conquest during the reign of Itzcoatl (see footnote 19, map 13).

Torquemada (1: 153) makes it clear that, despite the alleged defeat, "Chalco" continued in rebellion for 30 years more, and he mentions (1: 158, 161, 163) new uprisings and subjugations during the reign of Moctezuma I, following the supposed conquest.

[4] Doubtful. The Códice Chimalpopoca does not state definitely that Huehuetlán was conquered by the Mexicans, and the implication of conquest is not particularly strong. Moreover, no confirmation of this supposed victory is found in other sources which we have examined.

[4a] Identification of "Tecalco" with modern Tecali is well-founded. "Tecalco" usually appears in association with Tepeaca (legends to maps 14, 15). Moreover, the shift in final syllable is recorded by Muñoz Camargo (p. 247).

[5] Following the conquest of Cuautinchán, Netzahualcoyotl decided to dedicate a new temple. In honor of the occasion, he planned a campaign against Zumpango, Jilocingo, and "Citlaltépetl," and in this the Mexicans participated (Códice Chimalpopoca, p. 54). Apparently this was the war in which Totonac and Huasteca were defeated (ftn. 46, p. 272).

[6] The Matrícula de tributos (5: 76) groups this town with pueblos located in modern Guerrero; moreover, Torquemada (1: 157) writes it thus, "Quauhteopan." These two facts suggest identification with Cuautipan, Guerrero.

[7] Not identified (ftn. 36, p. 268).

[8] For each pueblo to which footnote 8 refers, the Anales do not speak explicitly of conquest, but use merely the expression "they perished." However, the conquests are confirmed elsewhere:

Coatepec: Códice Chimalpopoca.

Coixtlahuaca: Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas, Torquemada, Tezozomoc.

Huatusco: Códice Chimalpopoca, Colección de Mendoza, Torquemada.

Cotaxtla: Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas, Codex Telleriano-Remensis, Torquemada, Tezozomoc.

Tepeaca: Códice Chimalpopoca, Torquemada, Tezozomoc.

Moreover, Ixtlilxochitl (2: 196) confirms the conquests of Coixtlahuaca, Huatusco, Cotaxtla, and Tepeaca, although he places them during the reign of Itzcoatl (see footnote 19, map 13).

In fact, Oxtotipan is the only pueblo whose conquest is not confirmed by other sources. Nevertheless, the close agreement between the list given by the Anales de Tlatelolco and the conquests enumerated by other sources, leads us to suspect that Oxtotipan should be regarded as a Mexican conquest—the more particularly since it lies in the Tepeaca area of modern Puebla, a zone profoundly affected by the conquests of Moctezuma I.

[9] Not shown on our map. "Estos *couixcas* y *ilapanecas* son unos que . . . están poblados en *Tepequacuílco* y *Tlachimalacac*, en la provincia de *Chilapan*" (Sahagún 3: 133). The northeastern area of modern Guerrero clearly is indicated.

According to the Anales de Tlatelolco (p. 57), Cuernavaca took the initiative in the conquest of the Cohuixca but allowed the Mexicans to share in the booty. Nevertheless, Torquemada (1: 157) and Ixtlilxochitl (2: 201) regard the victory as one of the Triple Alliance.

[10] The Anales de Tlatelolco do not state that Huejotzingo, Tlaxcala, and Cholula were conquered, but explain that their warriors were defeated in the course of one of the Cotaxtla campaigns (ftn. 43, p. 271).

[11] The Anales de Tlatelolco do not speak explicitly of conquest, but it is clearly evident that there were repeated hostilities between the Mexicans and "Chalco" during the reign of Moctezuma I (see footnote 3, above).

[12] Not identified; the association with "Tenanco" and "Chiconquiauhco" suggests the location which has been assigned in map 14.

[13] Identification dubious. The Códice Chimalpopoca sandwiches "Yohualtépec" between a town in Puebla and one in Guerrero; the "Yoaltepec" of the Colección de Mendoza appears in the list between a pueblo in modern Morelos and one in Guerrero. The "Hualtepec" of Ixtlilxochitl is associated with "Teohuacan, Cuetlachtlan, Quauhtochco," all relatively close to modern Yehualtepec, in eastern Puebla, with which we have tentatively identified the conquest.

[14] See footnote 11, map 13.

[15] The Codex Telleriano-Remensis does not claim a conquest, but mentions a battle in this pueblo, which probably was related to the conquest of various Otomí-Mazahua pueblos in this same general area (Nos. 26, 27, 44, 46; Códice Chimalpopoca, Colección de Mendoza).

[16] The Codex Telleriano-Remensis merely reports a battle with Tlaxcalans on the fringes of Texcoco. At this time, the Triple Alliance was beginning to take steps to surround and isolate Tlaxcala.

[17] See footnote 3, above.

[18] Torquemada reports a war between Tenochtitlan and Tlatelolco, in which the ruler of the latter perished. Nevertheless, Tlatelolco did not become a tributary of Tenochtitlan until the days of Axayacatl (See No. 3, map 15, table 18).

[19] This settlement no longer exists, but its ruins are known by the name of the old pueblo.

[20] Identification doubtful. The pueblo is mentioned in company with others of modern Guerrero, and there is a slight resemblance between the ancient name and that of the modern pueblo with which it dubiously has been identified.

[21] There is a Tzompahuacán in modern Puebla, but we believe it more likely that the town in question is to be identified with Zumpahuacán, in Mexico, for Torquemada mentions the conquest in company with pueblos which lie in northwestern Guerrero.

[22] Torquemada does not give Tlaxcala and Huejotzingo as conquered pueblos but notes that their warriors were defeated in the course of the Triple Alliance war with Coixtlahuaca.

[23] Not identified. The association with "Tochtepec, . . , Tzapotla, Tototlan" and "Tlatlactetelco" suggests a location in northeast Oaxaca or in adjacent Veracruz.

[24] Not identified with any modern pueblo, but the name appears on a sixteenth-century map (No. 57, of the Colección Orozco y Berra), and the location shown there is confirmed by the Suma (No. 843).

[25] The source is not explicit and may refer either to a town or to the province of the Chinantecs. One of the pueblos of the latter is "Tochtepec," which Torquemada lists among the Mexican conquests. Elsewhere, Torquemada (1: 187) speaks of "Chinantla" as a province. Nevertheless, in the sixteenth century, there was a pueblo of this name in the zone touched by the present campaign; it is possible that this town (Suma, No. 6) is intended rather than the province.

[26] Not identified; perhaps "Quauhtochco" (Huatusco, No. 15) is intended.

[27] Not identified: see ftn. 37, p. 269.

[28] Not identified; the pueblos in association suggest a location in modern Puebla.

[29] "Cempoala" and "Quiahuixtlan" were involved in Moctezuma's campaign. But in the long description given by Tezozomoc (pp. 122–131), they did not become the scene of battle. Nevertheless, subsequently, they were considered tributaries of the Triple Alliance (pp. 272–273), although, strangely enough, their conquest is not reported in other sources and neither "Cempoala" nor "Quiahuixtlan" appears in the Matrícula de tributos. Both pueblos are extinct, but both are well known archeologically.

[30] Not identified. The presumed location has been indicated on the basis of the Códice Tonayan (Barlow, 1947 b) (ftn. 40, p. 270).

[30a] The pueblo no longer exists but the name still is associated with its ruins (García Payón, 1947, p. 303).

[31] At this time, Tezozomoc does not speak of the conquest of Oaxaca, but remarks that prisoners from there were sacrificed in Tenochtitlan. Nevertheless, later, (p. 160) he does describe the conquest of the pueblo of that name.

[32] Dibble's interpretation of the Códice en Cruz (pp. 50–51) is a year of plenty. However, he suggests that the glyph is similar to that of "Quiyauhteopan" as shown in the Colección de Mendoza (5: 45), although noting that in the Códice en Cruz it is not accompanied by any sign which would indicate war or conquest.

The conquest of Cuautipan is reported in other sources (Códice Chimalpopoca, Colección de Mendoza, Torquemada, Ixtlilxochitl), and it is by no means impossible that the Códice en Cruz actually gives us, somewhat ambiguously, the date for this victory.

Dibble's interpretation of Coixtlahuaca likewise is dubious, but we have confirmation in other sources (see footnote 8 above).

[33] See footnote 16, map 13.

[34] See footnote 18, map 13.

[35] See footnote 19, map 13.

[36] Following the conquest of Huatusco, Ixtlilxochitl has Netzahualcoyotl conquer Tuxpan, Chicontepec, and Tuxtepec. These victories he claims for Texcoco, not for the Triple Alliance.

But other authorities credit Mexico with the conquest of Tuxpan (Tezozomoc, p. 105), Chicontepec (Codex Telleriano-Remensis 5: 150; Tezozomoc, p. 105), and Tuxtepec (Torquemada 1: 160).

Moreover, Ixtlilxochitl reports other conquests for Texcoco alone; these are mentioned elsewhere (ftn. 37, p. 269).

[37] See footnote 11, map 10.

[38] Ixtlilxochitl apparently places these conquests in the days of Itzcoatl, although his statement is confused. Other sources attribute them to Moctezuma I. "Mazahuacan" is within the area mentioned in footnote 15, above, and Tlapacoyan and Tlalcozotitlán appear in the Códice Chimalpopoca (p. 67) and the Colección de Mendoza (5: 45), all three as conquests of Moctezuma I.

Map 15.—Mexican wars: Axayacatl (1469–81).

(For legend, see pp. 297–300.)

*Legend to map 15*

Mexican wars: Axayacatl (1469–81). See legend to map 10.

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Tlatlauhquitepecas [1] | | Tlatlauquitepec, Puebla. |
| 2 | Cuaxoxocan [2] | 55 | Cuaxoxoca, México. |
| 3 | Tlatilolcas [3] | | Tlatelolco, D. F. |
| 4 | Huexotla [4] | | Huexotla, México. |
| 5 | Matlatzincas [5] | | |
| 6 | Ocuilan | 56 | Ocuilan de Arteaga, México. |
| 7 | Cuauhnahuacas [6] | | Cuernavaca, Morelos. |
| 8 | Poctepecas [7] | | Pochote, Guerrero. |
| | Matlatzinco | 57 | See 5. |
| 9 | Xiquipilco | | Jiquipilco el Viejo, México. |
| | Tlatilolco | | See 3. |
| | Xiquipilco | | See 9. |
| 10 | Tollocan | | Toluca de Lerdo, México. |
| 11 | Tzinacantépec | | San Miguel Zinacantepec, México. |
| 12 | Tlacotépec | | Tlacotepec, México. |
| 13 | Callimayan | | Calimaya de Díaz González, México. |
| 14 | Teotenanco | | Tenango de Arista, México. |
| 15 | Tenantzinco | | Tenancingo de Degollado, México. |
| 16 | Xochiyacan | | Xochiaca, México. |
| | Ocuillan | | See 6. |
| 17 | Metépec | | Metepec, México. |
| 18 | Oztoman [8] | | "Oztuma," Guerrero. |
| 19 | Capolloac | | Capulhuac de Mirafuentes, México. |
| 20 | Atlappolco | | San Pedro Atlapulco, México. |
| 21 | Tlaximalloyan | | Ciudad Hidalgo, Michoacán, formerly "Taximaroa." |
| 22 | Xallatlauhco [9] | | Jalatlaco, México. |
| 23 | Cuappanohuayan | | San Juan Coapanoaya, México. |
| 24 | Ocoyácac | 67 | Ocoyoacac, México. |
| 25 | Tepeyácac | | Tepeaca, Puebla. |
| 26 | Tecalco [9a] | | Tecali de Herrera, Puebla. |
| 27 | Cuezcomayxthlahuacan [10] | | Coscomatepec de Bravo, Veracruz. |
| 28 | Matlatlan | | Maltrata, Veracruz. |
| 29 | Oztotícpac | | Santa María Oxtotipan, Puebla. |
| 30 | Tlaollan [11] | | Tlaquilpa, Veracruz. |
| 31 | Ahuilizapan | | Orizaba, Veracruz. |
| 32 | Tozcauhtlan [12] | | Poxcautla, Veracruz. |
| 33 | Totoltlan | | Totutla, Veracruz. |
| 34 | Cuetlaxtlan | | Cotaxtla, Veracruz. |
| 35 | Cuetzalóztoc | | Quetzaltotoc, Veracruz. |
| 36 | Mixtlan | | San Andrés Mixtla, Veracruz. |
| 37 | Tzapotitlan | | Zapotitlán, Veracruz. |
| 38 | Micquetlan | | Mequetla, Veracruz. |
| 39 | Tochpan | | Tuxpan, Veracruz. |
| 40 | Tenextícpac [13] | | "Tenestiquepaque," Veracruz. |
| 41 | Tapátel | | Tampatel, Veracruz. |
| 42 | Tamómox [14] | | "Tamohox," Veracruz. |
| | Anales de Tlatelolco: | | |
| | Tlatelolco [3] | | See 3. |
| | Xiquipilco | | See 9. |
| | Tolocan | | See 10. |
| | Tzinacantépec | | See 11. |
| | Tlacotépec | | See 12. |
| | Calimaya | | See 13. |
| | Teotenanco | | See 14. |
| | Tenantzinco | | See 15. |
| | Xochiu . . .[15] | 17 | See 16. |
| 43 | Quauhximalpa | | Cuajimalpa, D. F. |
| | Xalatlauhco | | See 22. |
| | Quapanouaya | | See 23. |
| | Teouyácac [16] | | See 24. |
| | Tepeyácac | | See 25. |
| | Tecalco | | See 26. |
| | Cuezcómatl [17] | | See 27. |
| | Yácac [17] | | See 27. |

See footnotes on page 300.

*Legend to map 15*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Anales de Tlatelolco—Continued | | |
| | Matlatlan | | See 28. |
| | Oztotícpac | | See 29. |
| | Tlauililpan [11] | | See 30. |
| | Pozcauhtlan | | See 32. |
| | Tototlan | | See 33. |
| | Cuextla [18] | | See 34. |
| | Cuezalóztoc | 17 | See 35. |
| | Mixtlan | | See 36. |
| | Tetzapotitlan | | See 37. |
| 44 | Coyouacan [19] | | Chicontepec, Veracruz. |
| | Tochpan | | See 39. |
| 45 | Cuextecatépec [20] | | |
| 46 | Occentépetl [21] | | |
| | Tlatelolco [3] | | See 3. |
| | Matlatzinca [22] | 59 | See 5. |
| | Ocuilteca [22] | | See 6. |
| | Colección de Mendoza: | | |
| | Tlatilula | | See 3. |
| | Atlapula | | See 20. |
| | Xalatlan [23] | | See 22. |
| | Tlacotepec | | See 12. |
| | Metepec | | See 17. |
| | Capuluac | | See 19. |
| | Ocoyacac | | See 24. |
| | Quauhpanoayan | | See 23. |
| | Xochiacan | | See 16. |
| | Teotenanco | | See 14. |
| | Calymaya | | See 13. |
| | Çinacantepec | | See 11. |
| | Tulucan | | See 10. |
| | Xiquipilco | | See 9. |
| | Tenanzinco | | See 15. |
| | Tepeyaca | | See 25. |
| | Tlaximaloyan | | See 21. |
| | Oztoma | | See 18. |
| 47 | Xocotitlan | 5: 46 | Jocotitlán, Guerrero. |
| | Ocuilan | | See 6. |
| | Oztoticpac | | See 29. |
| | Matlatlan | | See 28. |
| | Cuezcomatlyyacac [10] | | See 27. |
| | Tecalco | | See 26. |
| | Cuetlaxtlam | | See 34. |
| | Puxcauhtlam | | See 32. |
| | Ahuilizapan | | See 31. |
| | Tlaolan [11] | | See 30. |
| | Mixtlan | | See 36. |
| | Cueçaloztoc | | See 35. |
| | Tetzopotitlan | | See 37. |
| | Miquiyetlan | | See 38. |
| | Tamuoc | | See 42. |
| | Tanpatel | | See 41. |
| | Tuchpan | | See 39. |
| | Tenexticpac | | See 40. |
| 48 | Quauhtlan [24] | | |
| | Historia de los mexicanos por sus pinturas: | | |
| | Tatilulco | | See 3. |
| | Cuetlasta | 231 | See 34. |
| 49 | Malinalco [25] | | Malinalco, México. |
| | Matalcingo | | See 5. |
| | Codex Telleriano-Remensis: | | |
| | Matalcingo | | See 5. |
| | Toluca | | See 10. |
| | Tlatelulco | 5: 151 | See 3. |
| | Coatlaxtla | | See 34. |
| | Oquila | | See 6. |
| | Xiquipilco | 5: 152 | See 9. |

ee footnotes on page 300.

*Legend to map 15*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Torquemada: | | |
| 50 | Tecuantepec | 1:172 | Santo Domingo Tehuantepec, Oaxaca. |
| 51 | Coatulco | | Santa María Huatulco, Oaxaca. |
| 52 | Huexotzinco [26] | | Huejotzingo, Puebla. |
| 53 | Atlixco [26] | | Atlixco, Puebla. |
| | Cuetlachtecas | 1:176 | See 34. |
| 54 | Xuchitepecas [27] | | San Miguel Suchixtepec, Oaxaca. |
| | Tlatelulco | 1:180 | See 3. |
| | Matlatçinca | 1:181 | See 5. |
| | Xalatlauhco [9] | | See 22. |
| | Tçinacantepec | | See 11. |
| | Ocuiltecas | | See 6 |
| 55 | Malacatepec | | San José, México, formerly "Malacatepec." |
| 56 | Coatepec [28] | | See 55. |
| | Xiquipilco | | See 56. |
| | Matlatçincas | 1:182 | See 9. |
| | Toluca | | See 5. |
| | Tlacotepec | | See 10. |
| | Tochpan | | See 12. |
| | Tototlan | | See 39. |
| | | | See 33. |
| | Tezozomoc: | | |
| | Tlatelulco | 198 | See 3. |
| | Matlatzincas | 205 | See 5. |
| | Cuapanoayan | 206 | See 23. |
| | Toluqueños | 208 | See 10. |
| | Calimaya | | See 13. |
| 57 | Tepemaxalco | | Tepemajalco, México. |
| 58 | Tlacotempan [29] | | See 11. |
| | Tzinacantepec | | See 12. |
| | Tlacotepec | | "Cempoala," Veracruz. |
| 59 | Zempoaltecas [30] | 216 | "Quiahuixtlan," Veracruz. |
| 60 | Quiahuiztecas [30] | | Nacatepec, México. |
| 61 | Necantepec [31] | 226 | |
| 62 | Mechoacan [32] | 227 | See 21. |
| | Tlazimaloyan [33] | 230 | |
| 63 | Tliliuhquitepec [34] | 236 | |
| | Códice en Cruz: | | |
| | Tlatelolco | 59 | See 3. |
| | Huexotla [35] | 61 | See 4. |
| | Matlaltzincas [35] | | See 5. |
| | Cuetlaxtlan [35] | 62 | See 34. |
| | Xiquipilco | | See 9. |
| | Ixtlilxochitl: | | |
| | Tlatelulco | 2:251 | See 3. |
| | Matlaltzinco | 2:256 | See 5. |
| | Xalatlahuco [9] | | See 22. |
| | Tzinacantepec | | See 11. |
| | Ocuiltecas | | See 6. |
| | Malacatepec | | See 55. |
| | Coatepec | | See 56. |
| 64 | Otomíes [36] | | |
| 65 | Chichimecas [36] | | |
| 66 | Macahuas [36] | | |
| | Matlatzincas [36] | | See 5. |
| | Xiquipilco | | See 9. |
| | Xocotitlan | | See 47. |
| 67 | Xilotepec | | Jilotepec de Abasolo, México. |
| | Teuhtenanco | | See 14. |
| | Tlacotepec | | See 12. |
| | Callimayan | | See 13. |
| 68 | Amatepec | | Amatepec, México. |
| 69 | Zimatepec [37] | | |
| | Tolocan | | See 10. |
| 70 | Maxtlacan [38] | 2:257 | Maxtleca, México. |
| 71 | Coquitzinco [38] | | Joquicingo de León Guzmán, México. |

See footnotes on page 300.

*Legend to map 15*—Continued

[1] This conquest appears isolated in the Códice Chimalpopoca and, moreover, is not mentioned in other sources. Accordingly, there are no associated pueblos to give clue to identification. Two modern towns are candidates: Magdalena Tlatlauquitepec and Tlatlauquitepec. The former appears to have been a relatively obscure settlement, and we think identification with the latter more likely, especially since, in the Matrícula de tributos (5: 86), Tlatlauquitepec is listed in company with Teziutlán.

[2] With respect to Cuaxoxoca, the Códice Chimalpopoca states merely that "fueron a pelear"; nor is conquest recorded in other sources.

[3] The Códice Chimalpopoca describes the war between Tlatelolco and Tenochtitlan. Conquest by the latter is confirmed elsewhere in the same source (p. 67), as well as in the Colección de Mendoza, the Historia de los mexicanos por sus pinturas, the Codex Telleriano-Remensis, Torquemada, Tezozomoc, Códice en Cruz, and Ixtlilxochitl. All these sources agree that Tlatelolco was defeated definitively, although the Anales de Tlatelolco confine themselves to mentioning war, without indicating the outcome.

[4] The Códice Chimalpopoca reports war with Huexotla, as does, somewhat dubiously, the Códice en Cruz.

[5] Not shown on map. See footnote 9, map 13. The Códice Chimalpopoca states merely that "se diseminaron los matlatzincas," which we suspect implies conquest. A series of conquered pueblos in the Matlatzinca area, west of the Valley of Mexico, is listed elsewhere in the same source (p. 67), as well as in the Anales de Tlatelolco, the Colección de Mendoza, the Codex Telleriano-Remensis, Torquemada, Tezozomoc, and Ixtlilxochitl (see map).

[6] The Códice Chimalpopoca states that those of Cuernavaca were "destroyed," from which we infer conquest. Nevertheless, other sources are not confirmatory.

[7] Here, the Códice Chimalpopoca states that "se perdieron," which we interpret as conquest or, more accurately, reconquest, for this pueblo was subjected in the days of Moctezuma I (No. 55, map 14). The identification is discussed in footnote 20, map 14.

[8] Pueblo now extinct; name attached to well-known archeological site.

[9] The Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza list this pueblo as conquered; Torquemada and Ixtlilxochitl merely have it repopulated during the reign of Axayacatl.

[9a] See footnote 4a, map 14.

[10] There are variant spellings: "Cuezcómatl Yácac" (Anales de Tlatelolco), "Cuezcomatlyyacac" (Colección de Mendoza). In each case, the pueblo is associated with settlements in modern Puebla and in western Veracruz. Accordingly, we suspect the name may survive in modern Coscomatepec.

[11] From the sequential order of listing, it is evident that "Tlaollan" (Códice Chimalpopoca) and "Tlauilipan" (Anales de Tlatelolco) are one and the same. In that case, the pueblos in association suggest identification with modern Tlaquilpa.

[12] This pueblo evidently is the same as "Pozcauhtlan" (Anales de Tlatelolco, Colección de Mendoza, Nazareo 10: 119). Modern Poxcautla does not appear in the 1930 census but is shown on the Carta general (pl. VIII).

[13] This pueblo, now extinct, can be located approximately (ftn. 49, p. 274).

[14] Not in the 1930 census. The Doctrinas (p. 219) locate this pueblo in the vicinity of Tamiahua and "Tenexticpac," where it has been placed on our map.

[15] In the Anales de Tlatelolco, this name is incomplete, but the missing parts can be supplied by comparison with the lists of the Códice Chimalpopoca and the Colección de Mendoza.

[16] "Teouyácac" occupies in the list of the Anales de Tlatelolco, the same relative position as does "Ocoyácac," in the Códice Chimalpopoca. Accordingly, we have identified "Teouyácac" with modern Ocoyoacac.

[17] Here, what we take to be the ancient name of Coscomatepec has been separated and appears as two distinct pueblos; see footnote 10, above.

[18] In the list of the Anales de Tlatelolco, "Cuextla" occupies the same relative position as does "Cuetlaxtlan," in the Códice Chimalpopoca. Accordingly, in this case, we have identified "Cuextla" with Cotaxtla (ftn. 37, p. 269).

[19] Our guess is that "Coyouacan" is to be identified with "Tziuhcouacan" (Anales de Tlatelolco, p. 60). The latter clearly is the equivalent of "Tzicoac," which we have identified with modern Chicontepec (ftn. 33, p. 267).

[20] Not identified and not shown on map; it is possible that this is not a pueblo. The name translates "hill of the Cuexteca," and in the Anales de Tlatelolco, it follows two pueblos which we place in the Huasteca.

[21] Not identified; name and association suggest the Huasteca and in the Matrícula de tributos (5: 87) an "Oçelotepec" appears situated in the province of Tuxpan. It is queried on the map.

[22] Although the Anales de Tlatelolco state merely that "they perished," conquests in the Matlatzinca zone are amply confirmed by other data (see fn. 5, above).

As a matter of fact, the conquest of Ocuilan is confirmed specifically by the Códice Chimalpopoca, the Colección de Mendoza, the Codex Telleriano-Remensis, Torquemada, and Ixtlilxochitl.

[23] We suspect that "Xalatlan" may be modern Jalatlaco. In the Colección de Mendoza, it is listed immediately following "Atlapula," which is identifiable with Atlapulco, in the same general area.

[24] Not identified. The associated pueblos suggest a location in the Huasteca. During the sixteenth century, a settlement subject to Papantla was named "Quaotlan" (Suma, No. 449), but it seems unlikely that this town is indicated. It is queried on the map.

[25] The Historia de los mexicanos por sus pinturas states that Axayacatl appointed the ruler of Malinalco, which implies previous conquest, related perhaps to the subjection of nearby towns, such as Tenancingo and Tenango.

[26] Torquemada simply speaks of a war, in which the Mexicans were victorious; he remarks (1: 173), following this campaign, that the war "quedó abierta para todo tiempo." Such battles were not for conquest, but to obtain sacrificial victims. This type of war has been called *guerra florida*.

[27] Torquemada places "Xuchitepec" on the "coast of Anahuac," which might refer either to the Gulf or to the Pacific (ftn. 33, p. 16). We assume that in this case "Xuchitepec" is the province of that name in Oaxaca.

[28] Torquemada does not give sufficient detail to permit us to select between the three or four pueblos of this name in the Matlatzinca zone.

[29] Not identified; from the sequence in Tezozomoc, the town should lie between Tepemajalco and Zinacantepec. On our map, it is shown there accompanied by an interrogation point.

[30] In this passage, Tezozomoc does not speak definitely of the conquest of these two important Totonac towns, but his account implies an earlier subjection (ftn. 29, map 14), followed, in the days of Axayacatl, by formal gestures of submission.

[31] Tezozomoc states merely that this pueblo served as a base for the Mexican Army prior to the Michoacán campaign; this presupposes that it was in the hands of the Triple Alliance at that time.

[32] Not shown on our map. The "Mechoacan" of Tezozomoc probably corresponds pretty closely to the area covered by the State of Michoacán today.

[33] This pueblo is not said to be conquered; it merely was the spot where the Triple Alliance forces foregathered after their defeat at the hands of the Tarascans. The data at hand do not indicate if it had been conquered previously or in the course of the Michoacán campaign.

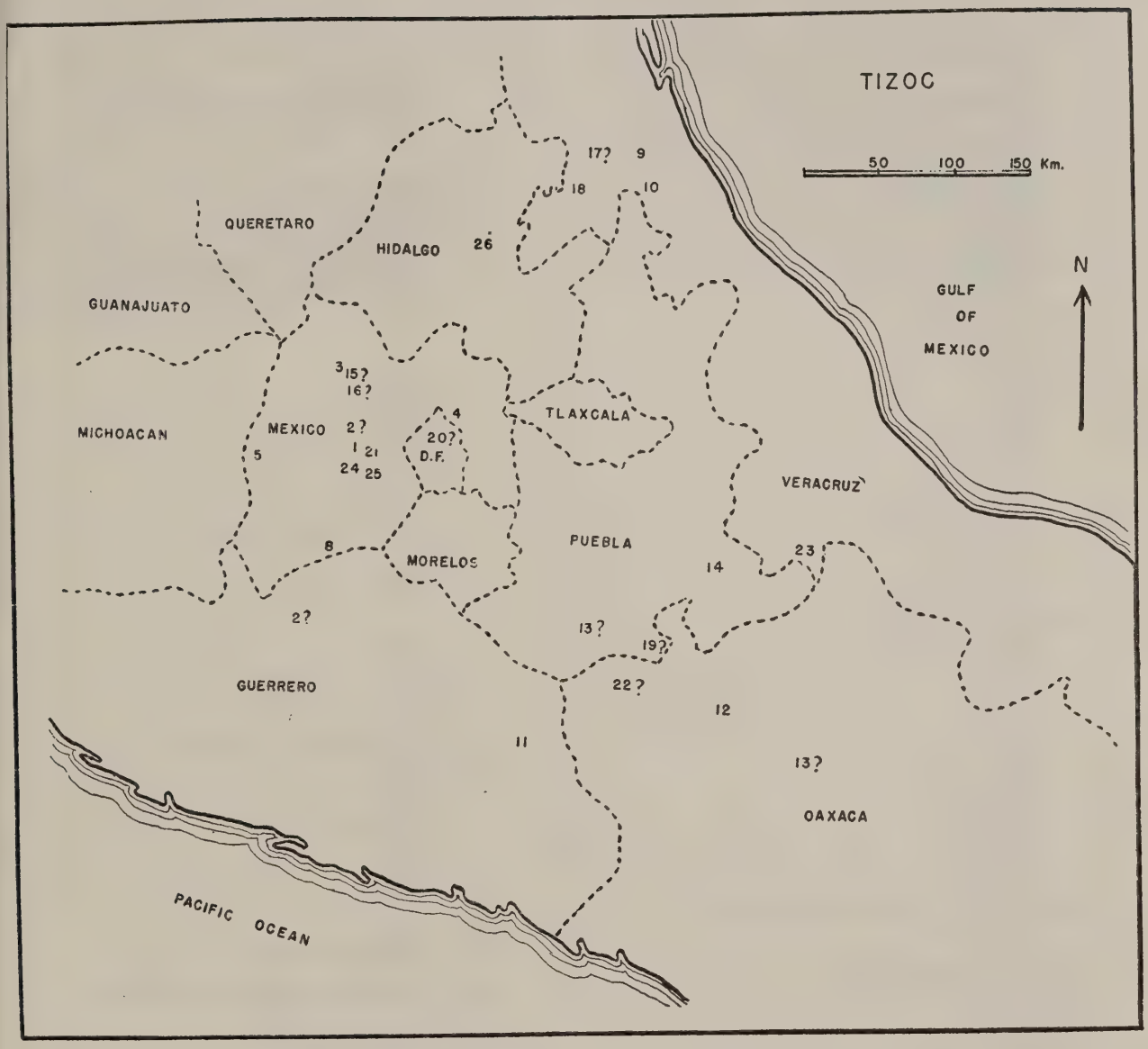
[34] Tezozomoc speaks of "Tliliuhquitepec" as if it were an enemy pueblo. We have been unable to identify it. The Codex Telleriano-Remensis (5: 151) seems to indicate that it was a hill where Mexican and Tlaxcalan forces battled.

[35] Dibble's interpretation of the Códice en Cruz is dubious. With respect to the conquest of Huexotla, see footnote 4, above; for the Matlatzinca zone, see footnote 5. The conquest of Cotaxtla is fully confirmed (Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis, and Torquemada).

[36] According to Ixtlilxochitl, the campaign was directed "contra los chichimecas y otomíes de todas las provincias que contienen tres naciones, que son otomíes, macahuas y matlatzincas." Thereafter, he lists the conquered pueblos (Nos. 9–10, 12–14, 47, 67–71), from which it is evident that the campaign lay almost exclusively within the present State of Mexico.

[37] Not identified. The order in which Ixtlilxochitl mentions these conquests suggests that "Zimatepec" may be in the Valley of Toluca or to the south.

[38] In the division of spoils which followed the Triple Alliance campaign, these pueblos were given to Texcoco (Ixtlilxochitl 2: 257).




Map 16.—Mexican wars: Tizoc (1481–86).

(For legend, see pp. 302–303.)

*Legend to map 16*

Mexican wars: Tizoc (1481–86). See legend to map 10.

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Tecáxic | | Tecaxic, México. |
| 2 | Tonallymoquetzayan [1] | | |
| 3 | Toxico | | Toxhí, México. |
| 4 | Ecatépec | | Ecatepec Morelos, México. |
| 5 | Çillan | | Chila, México. |
| 6 | Matlatzinco [2] | | |
| 7 | Maçatépec [3] | 67 | |
| 8 | Ecatlyquappanco [4] | | Tlapexco, México. |
| 9 | Tamapachco | | Temapache, Veracruz. |
| 10 | Micquetlan | | Mequetla, Veracruz. |
| 11 | Otlappan [5] | | Tlapa, Guerrero. |
| 12 | Yancuitlan | | Santo Domingo Yanhuitlán, Oaxaca. |
| 13 | Xochiyetlan [6] | | Yetla, Oaxaca, or Yetlan, Puebla. |
| 14 | Atezcahuacan | | Tehuacán, Puebla. |
| | Anales de Tlatelolco: | | |
| 15 | Tequauhcózcac [7] | | |
| 16 | Occetépec [7] | | |
| | Toxico | | See 3. |
| | Ecatépec | | See 4. |
| | Tzilan | | See 5. |
| | Matlatzinco | | See 6. |
| | Mazauacan | | See 7. |
| | Ecatlapechco | 17 | See 8. |
| | Matlapachco [8] | | See 9. |
| 17 | Occentépetl [9] | | |
| 18 | Tlatlauhquiycxic [10] | | Tlatlacxoquico, Veracruz. |
| 19 | Tilmatlan [11] | | |
| | Ycxochitlan | | See 13. |
| | Atezcauacan | | See 14. |
| 20 | Chicpantlaca [12] | 59 | |
| | Colección de Mendoza: | | |
| | Tonalymoqueçayom | | See 2. |
| | Toxico | | See 3. |
| | Ecatepec | | See 4. |
| | Çilom | | See 5. |
| | Tecaxic | | See 1. |
| 21 | Tuluca | | Toluca de Lerdo, México. |
| | Yamanitlam [13] | | See 12. |
| | Tlapan | 5: 47 | See 11. |
| | Atezcahuacan | | See 14. |
| 22 | Maçatlam [14] | | "Maçatlan," Oaxaca. |
| | Xochiyetla | | See 13. |
| | Tamapacha | | See 9. |
| | Ecatlyguapecha | | See 8. |
| | Miquetlam | | See 10. |
| | Historia de los mexicanos por sus pinturas: | | |
| | Matalcingos [15] | 231 | See 6. |
| 23 | Tlaula [15] | | Tlaquilpa, Veracruz. |
| | Codex Telleriano-Remensis: | | |
| 24 | Cinacantepec [16] | 2: 152 | San Miguel Zinacantepec, México. |
| | Torquemada: | | |
| 25 | Tlacotepec | 1: 182 | Tlacotepec, México. |
| | Tezozomoc: | | |
| 26 | Meztitlan [17] | 250–252 | Metztitlán, Hidalgo. |
| 27 | Cuextlan [17] | 251 | |
| | Códice en Cruz: | | |
| | Huastecos | 64 | See 27. |

See footnotes on page 303.

*Legend to map 16*—Continued

[1] Barlow (1947 c, pp. 187–188) suggests that "Tonallymoquetzayan" may be modern Tonaliquizaya, northwest of Tetela, Guerrero; we do not find a settlement listed under this name in the 1930 census.

However, in both the Códice Chimalpopoca and the Colección de Mendoza, the pueblo appears together with Tecaxic, Toxhí, Ecatepec, and Chila, all in the State of Mexico; we suspect that the ancient town should be sought in this region rather than in Guerrero.

[2] See footnote 9, map 13.

[3] "Maçatepec" presumably is the equivalent of Mazahua (footnote 11, map 10); at least, in the Códice Chimalpopoca it occupies the place which, in the Anales de Tlatelolco, corresponds to Mazahua.

[4] "Ecatlyquappanco" evidently is the equivalent of "Ecatlapechco" and "Ecatlyguapecha," the latter respectively of the Anales de Tlatelolco and the Colección de Mendoza.

Our identification with Tlapexco is highly dubious. In both the Códice Chimalpopoca and the Anales de Tlatelolco, the pueblo falls between towns in the modern State of Mexico and in modern Veracruz. However, in the Colección de Mendoza, the association suggests a location in the Huasteca of Veracruz.

[5] "Otlappan" obviously corresponds to "Tlapan," of the Colección de Mendoza, hence is identifiable with modern Tlapa, in the State of Guerrero.

[6] "Xochiyetlan" might be identified either with modern Yetla, in Oaxaca, or with Yetlan, in Puebla; both possibilities are shown on the map.

[7] Not identified. The association of these two pueblos with Toxhí, Ecatepec, and Chila suggests a location in the modern State of Mexico, as shown on our map, or possibly an independent group in northern Veracruz (see footnote 21, map 15).

[8] "Matlapachco" corresponds to "Tamapachco" (Códice Chimalpopoca) and "Tamapacha" (Colección de Mendoza); we have identified it with Temapache, in modern Veracruz.

[9] Not identified, but obviously to be sought in the northern part of modern Veracruz (see footnote 21, map 15).

[10] Obviously located somewhere in northern Veracruz; the Anales de Tlatelolco speak of "Tlatlauhqui ycxi allá por Tziuhcóuac." We have identified the conquest with modern Tlatlacxoquico.

[11] Not identified; the two succeeding pueblos suggest a location somewhere in the modern Oaxaca-Puebla zone, and there we have placed it, with an interrogation point.

[12] Not identified. The Anales de Tlatelolco report the suppression of an uprising, thus implying previous conquest; the wording suggests a location not far from Tenochtitlan.

[13] We follow Peñafiel (p. 248) in interpreting "Yamanitlam" as Yanhuitlán.

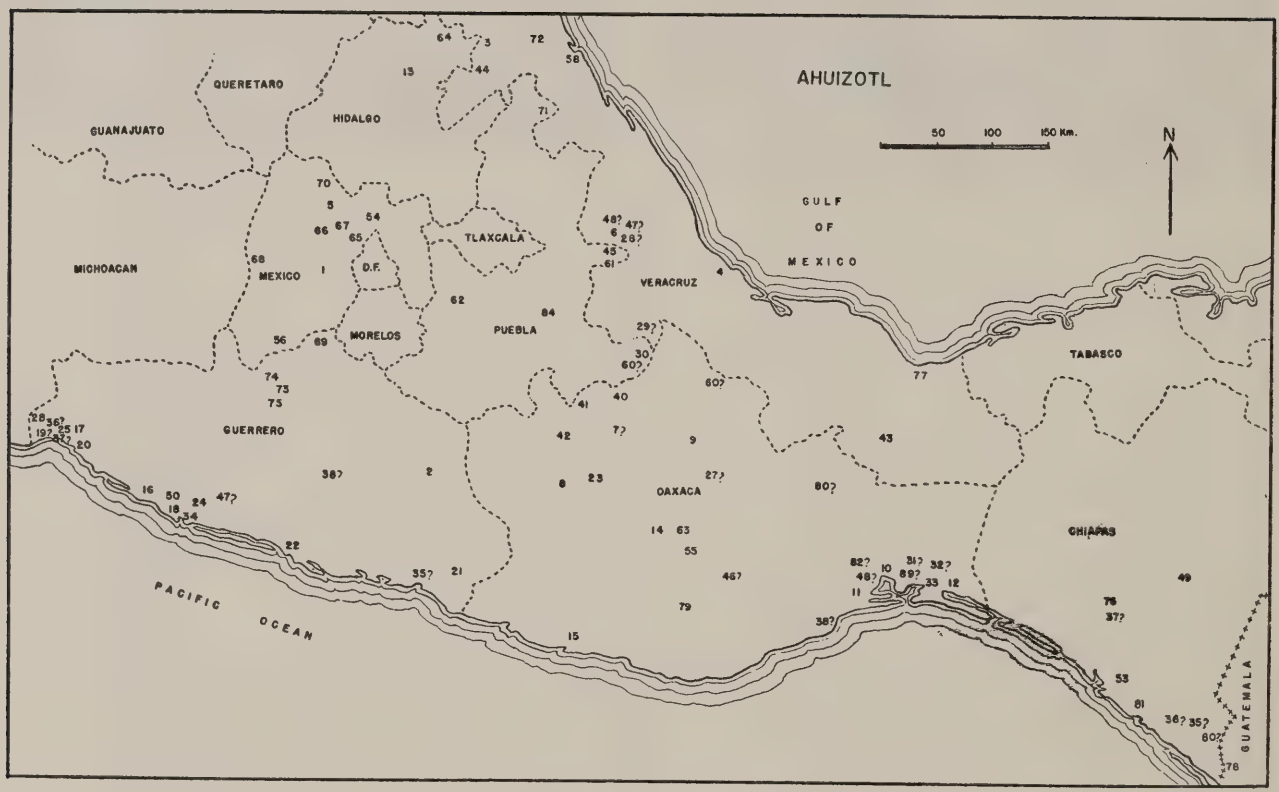
[14] Not identified; possibly the "Maçatlan" (Suma, No. 657) in the vicinity of Yanhuitlán and Tehuacán.

[15] The Historia de los mexicanos por sus pinturas states that victims of 'Matalcingos" and victims of "Tlaula" were sacrificed in Tenochtitlan.

Conquests in the Matlatzinca zone (Nos. 1, 2[?], 3, 5, 8[?], 15[?], 16[?], 21, 24, 25) are reported in the Códice Chimalpopoca, the Anales de Tlatelolco, the Colección de Mendoza, and Torquemada. The conquest of "Tlaula," however, is not confirmed by other sources; its identification is discussed in foot note 11, map 15.

[16] The Codex Telleriano-Remensis reports that the Mexicans went to Zinacantepec to obtain sacrificial victims. Conquests in this same general Matlatzinca zone, during the reign of Tizoc, are confirmed by other sources (see footnote 15, above).

[17] This campaign likewise was designed to obtain victims for sacrifice. In this instance, Tezozomoc uses "Cuextlan" to designate the Huasteca who helped defend Metztitlán against Mexican aggression.




MAP 17.—Mexican wars: Ahuizotl (1486–1502).

(For legend, see pp. 305–309.)

*Legend to map 17*

Mexican wars: Ahuizotl (1486–1502). See legend to map 10.

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Cozcaquauhtenancas [1] | 57 | Cuautenango, México. |
| 2 | Tlappanecas [1] | | Tlapa, Guerrero. |
| 3 | Tziuhcohuacas [1] | | Chicontepec, Veracruz. |
| 4 | Mictlanquauhtlatlaca [1, 2] | | "Mictlanquauhtla," Veracruz. |
| 5 | Chiappanecas [1] | 58 | Chapa de Mota, México. |
| | Cozcaquauhtenancas [1] | | See 1. |
| | Tzicoac [1] | | See 3. |
| 6 | Xicochimalcas [1] | | Jico Viejo, Veracruz. |
| 7 | Ayotochcuitlatlan [1, 2] | | Cuicatlán, Oaxaca. |
| 8 | Xaltépec [1] | | Jaltepec de Candayoc, Oaxaca. |
| 9 | Tliltépec [3] | | San Miguel Tiltepec, Oaxaca. |
| 10 | Xochtlan [4] | | Juchitán de Zaragoza, Oaxaca. |
| 11 | Tequantépec [4] | | Santo Domingo Tehuantepec, Oaxaca. |
| 12 | Amaxtlan [4] | | Amatitlán, Oaxaca. |
| | Xaltepecas [1] | | See 8. |
| | Tlappan | 67 | See 2. |
| | Tziuhcoac | | See 3. |
| 13 | Mollanco | | Molango, Hidalgo. |
| 14 | Tzapotlan | | Zaachila, Oaxaca, formerly "Teozapotlan." |
| | Xaltépec | | See 8. |
| 15 | Tototépec | | San Pedro Tututepec, Oaxaca. |
| | Xochtlan | | See 10. |
| | Amaxtlan | | See 12. |
| | Chiyappan | | See 5. |
| | Cozcaquauhtenanco | | See 1. |
| 16 | Xollochiyuhyan | | Joluchaca, Guerrero, formerly "Joluchuca." |
| 17 | Coçohuipillan | | La Huipililla, Guerrero. |
| 18 | Coyócac | | Coyuquilla, Guerrero. |
| 19 | Apancallecan [5] | | |
| 20 | Xiuhtlan | | Chutla, Guerrero. |
| 21 | Acatlyyacac [6] | | Acatepec, Guerrero. |
| 22 | Acapolco | | Acapulco de Juárez, Guerrero. |
| 23 | Totollan [7] | | San Jerónimo Sosola, Oaxaca. |
| 24 | Tecpantépec | | Tecpan de Galeana, Guerrero. |
| 25 | Nexpan | | Nexpa, Guerrero. |
| 26 | Istactlallocan [8] | | |
| 27 | Teocuitlatlan [9] | | |
| 28 | Teopochtlan [10] | | |
| | Xicochimalco | | See 6. |
| 29 | Cuauhxayacatitlan [11] | | |
| 30 | Coyolapan | | Coyulapa, Puebla. |
| 31 | Cuauhnacaztitlan [12] | | |
| 32 | Cuetzalcuitlapillan [12] | | |
| 33 | Izhuatlan | | San Francisco Ixhuatán, Oaxaca. |
| 34 | Çihuatlan [13] | | "Ciguatlan," Guerrero. |
| 35 | Huehuetlan [13] | | Huehuetán, Guerrero, or Huehuetán, Chiapas. |
| 36 | Huitztlan [13] | | Huixtla, Chiapas, or "Huiztlan," Guerrero. |
| 37 | Xolotlan [13] | | Soconusco, Chiapas, or Joluta, Guerrero. |
| 38 | Maçatlan [13] | | Santa Cruz Mazatán, Oaxaca, or Mazatlán, Guerrero. |
| 39 | Huipillan [14] | | |
| | Tequantépec | | See 11. |
| | Ayotochcuitlatlan | | See 7. |
| 40 | Cuauhtlan | | Huautla de Jiménez, Oaxaca. |
| 41 | Mizquitlan | | San Francisco, Oaxaca, formerly "Mezquititán." |
| 42 | Tlacotépec | | Tlacotepec Plumas, Oaxaca. |
| 43 | Cuappilollan | | Coapiloloya, Veracruz. |
| | Anales de Tlatelolco: | | |
| 44 | Tlatlauhqui ycxi [15] | 17 | Tlatlacxoquico, Veracruz. |
| | Molanco | | See 13. |
| | Tzapotitlan | | See 14. |
| | Xaltépec | | See 8. |

See footnotes on page 309.

*Legend to map 17*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Anales de Tlatelolco—Continued | | |
| 45 | Pantlanala | | Patlanalán, Puebla. |
| | Xochtla | | See 10. |
| | Amaxatla | | See 12. |
| 46 | Yauhtépec [16] | | San Bartolo Yautepec, Oaxaca. |
| | Cozcaquauhtenanco | | See 1. |
| | Xolochiuhcan | | See 16. |
| | Tzohuilpillan | | See 17. |
| | Coyócac | | See 18. |
| | Acalecan | | See 19. |
| | Xiuiztlauacan | | See 20. |
| | Acatépec | | See 21. |
| | Acapolco | | See 22. |
| | Icxolotlan [17] | | |
| | . . . pec | | See 24. |
| | Nexpan | | See 25. |
| | Iztac tlalocan | | See 26. |
| | Teocuitlatlan | | See 27. |
| | Tzotzollan | | See 23. |
| | Xiconchimalco | | See 6. |
| | Quauhxayancantihuayan | 17 | See 29. |
| | Coyolloapan | | See 30. |
| | Nacazquauhtla | | See 31. |
| | Cuezalcuitlapilco | | See 32. |
| | Izhuatla | | See 33. |
| | Ciuatlan | | See 34. |
| | Ueuetlan | | See 35. |
| | Uitztla | | See 36. |
| | Xolotla | | See 37. |
| | Mazatlan | | See 38. |
| | Uipillan | | See 39. |
| | Tecuantépec | | See 11. |
| | Ayotochcuitlatlan | | See 7. |
| | Izatochco [18] | | See 7. |
| | Cuitlatlan [18] | | See 7. |
| | Quauhiztla [19] | | See 40. |
| | Uizquitlan [20] | | See 41. |
| | Tlacotépec | | See 42. |
| | Quauhpilloyan | | See 43. |
| | Tziuhcouacan [21] | | See 3. |
| | Coyolapaneca [21] | | See 30. |
| | Cozcaquauhtenanca [21] | | See 1. |
| | Chiapaneca [21] | | See 5. |
| | Amaxteca [21] | 60 | See 12. |
| | Xochintlantlaca [21] | | See 10. |
| | Tequantépec [21] | | See 11. |
| | Apanecan [21] | | See 19. |
| | Colección de Mendoza: | | |
| | Tziccoac | | See 3. |
| | Tlappan | | See 2. |
| | Molanco | | See 13. |
| | Amaxtlan | | See 12. |
| | Capotlan | | See 14. |
| | Xaltepec | | See 8. |
| | Chiapan | | See 5. |
| | Tototepec | | See 15. |
| | Xochtlan | | See 10. |
| | Xolochiuhyom | | See 16. |
| | Cozcaquauhtenanco | | See 1. |
| | Coçohuipilecan | | See 17. |
| | Coyuca | | See 18. |
| | Acatepec | | See 21. |
| | Huexolotlan | | See 37. |
| | Acapulco | | See 22. |
| | Xiuhhuacan | | See 20. |
| | Apancalecan | 5: 48 | See 19. |
| | Tecpatepec | | See 24. |
| 47 | Tepechiapa [22] | | |
| | Xicochimilco [1] | | See 6. |

See footnotes on page 309.

*Legend to map 17*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Colección de Mendoza—Continued | | |
| 48 | Xiuhtecçacatlan [23] | | |
| | Tecuantepec | | See 11. |
| | Coyolapan | | See 30. |
| | Yztactlealocan | | See 26. |
| | Teocnitlatla | | See 27. |
| | Huehuetlan | | See 35. |
| | Quauhxayacatitla | | See 29. |
| | Yzhuatlan | | See 33. |
| 49 | Comitlan | 5: 48 | Comitán, Chiapas. |
| 50 | Nantzintlan | | Nanzintla, Guerrero. |
| | Huipilan | | See 39. |
| 51 | Cahualan [24] | | |
| 52 | Yztatlan [24] | | |
| | Huitzlan | | See 36. |
| | Xolotlan | | See 37. |
| | Quauhnacaztlan | | See 31. |
| | Maçatlan | | See 38. |
| | Ayauhtochcintlatla | | See 7. |
| | Quauhtlan | | See 40. |
| | Cueçalcintlapila | | See 32. |
| 53 | Mapachtepec | 5:49 | Mapastepec, Chiapas. |
| | Quauhpilola | | See 43. |
| | Tlacotepec | | See 42. |
| | Mizquitlan | | See 41. |
| | Codex Telleriano-Remensis: | | |
| | Thiapa (Cabellilotepec) | 5:152 | See 5. |
| | Cuzcaquatenango | | See 1. |
| 54 | Atliçapa | | Atizapán de Zaragoza, México. |
| | Icxico [25] | | See 6. |
| | Chimalco [25] | 1:153 | See 6. |
| 55 | Mictla | | San Pablo Villa de Mitla, Oaxaca. |
| | Teutzapotlan | | See 14. |
| 56 | Cultepec | | Sultepec de Pedro Ascencio Alquisiras, México. |
| | Torquemada: | | |
| 57 | Maçahuas [26] | | |
| | Tziuhcoacas [27] | | See 3. |
| 58 | Tocpanecas [27] | 1:186 | Tuxpan, Veracruz. |
| | Tzapotecas | | See 14. |
| | Tlacupan [28] | | See 2. |
| 59 | Cuextlan [29] | | |
| 60 | Chinantla [30] | | |
| | Coyotlapanecas | | See 30. |
| | Cuzcaquahtenancas | 1:187 | See 1. |
| | Quappilollan | | See 43. |
| | Cueçalcuitlapillan [31] | | See 32. |
| | Quauhtla | | See 40. |
| 61 | Quimichtlan | | Quimixtlán, Puebla. |
| | Mizquitlan | 1:191 | See 41. |
| 62 | Atlixco [32] | | Atlixco, Puebla. |
| | Izquixuchitecas | | See 10. |
| | Amaxtecas | 1:192 | See 12. |
| | Tecuantepec | | See 11. |
| 63 | Tlacuilollan | | Tlacolula de Matamoros, Oaxaca. |
| 64 | Huexotla | 1: 193 | Huejutla, Hidalgo. |
| | Xaltepecas | | See 8. |
| | Tezozomoc: [33] | | |
| 65 | Chilocan [34] | 273 | Chiluca, México. |
| 66 | Xiquipilco | | Jiquipilco el Viejo, México. |
| 67 | Cuahuacan | | Santa María Magdalena, México, formerly "Cahuacán." |
| | | 274 | |
| 68 | Zilla | | Chila, México. |
| | Mazahuacan | | See 57. |
| 69 | Xocotitlan | | Jocotitlán, Guerrero. |
| | Chiapan | 279 | See 5. |
| 70 | Xilotepec | | Jilotepec de Abasolo, México. |
| 71 | Tuzapan | | "Tuzapan," Puebla. |
| | Tziuhcoac | 294 | See 3. |
| 72 | Tamapachco | | Temapache, Veracruz. |

See footnotes on page 309.

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*Legend to map 17*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Tezozomoc—Continued | | |
| 73 | Teloloapan | 342 | Teloloapan, Guerrero. |
| 74 | Oztoman [34a] | 344 | "Oztuma," Guerrero. |
| 75 | Alahuiztlan | | Alahuistlán Viejo, Guerrero. |
| | Xochtlan | | See 10. |
| | Amaxtlan | | See 12. |
| | Izhuatlan | | See 33. |
| | Xolotlan | 356 | See 37. |
| 76 | Xoconuchco | | Soconusco, Chiapas. |
| 77 | Coatzacualco | | Puerto México, Veracruz. |
| | Chinantecatl [35] | | See 60. |
| 78 | Ayotecatl | | Ayutla, Guatemala. |
| 79 | Miahuatecas | | San Andrés Miahuatlán, Oaxaca. |
| | Izhuatecas | | See 33. |
| | Xolotlan | 359 | See 37. |
| | Maxtlan | | See 12. |
| | Tehuantepec | | See 11. |
| | Tecuantepec | | See 11. |
| 80 | Tuxtecatl [36] | 362 | Santiago Tutla, Oaxaca, or Tuxtla Chico, Chiapas. |
| | Amaxtlan | | See 12. |
| | Tehuantepec | | See 11. |
| | Xochtlan | | See 10. |
| | Amaxtlan | 364 | See 12. |
| | Tlacuilolan | | See 63. |
| 81 | Acapetlahuacan | | Acapetagua, Chiapas. |
| | Xoconuchco | | See 76. |
| | Xolotecas | 370 | See 37. |
| | Ayotecas | | See 78. |
| | Mazatecas | | See 38. |
| | Xoconuchco | 371 | See 76. |
| 82 | Cozcatlan [37] | | |
| | Tehuantepec [38] | | See 11. |
| | Izhuatlan [38] | | See 33. |
| | Xochitecas [38] | 373 | See 10. |
| 83 | Chiltepec [38] | | |
| | Amaxtlan [38] | | See 12. |
| | Mazatlan | | See 38. |
| | Ayotecatl | | See 78. |
| | Xolotlan | 374 | See 37. |
| | Xoconuchco | | See 76. |
| | Códice en Cruz: [39] | | |
| | Tziuhcohuac [39] | | See 3. |
| | Tlapaneques [39] | 70 | See 2. |
| | Zapotecas [39] | | See 14. |
| | Atlixco [39] | 74 | See 62. |
| | Teozapotlan [39] | 75 | See 14. |
| | Atlixco [39] | 79 | See 62. |
| | Ixtlilxochitl: [40] | | |
| | Chinauhtla | | See 60. |
| | Coyolapan | | See 30. |
| 84 | Hualtecpec | | Yehualtepec, Puebla. |
| | Tlapan | | See 2. |
| | Xoconochco | | See 76. |
| | Xochtlan | 2: 271 | See 10. |
| | Amaxtlan | | See 12. |
| 85 | Tzapoteca [41] | | |
| 86 | Mizteca alta [41] | | |
| 87 | Mizteca baja [41] | | |
| 88 | Chiapan [42] | | |
| | Tzapotlan | | See 14. |
| | Xaltepec | | See 8. |
| | Tliltepec | 2: 283 | See 9. |
| | Tehuantepec | | See 11. |
| | Amaxtlan | | See 12. |
| | Xochitlan | | See 10. |
| | Tequantepec | | See 11. |
| 89 | Amextloapan [43] | 2: 289 | |
| | Xaltepec | | See 8. |

See footnotes on page 309.

*Legend to map 17*—Continued

[1] In all the cases to which footnote 1 applies, the Códice Chimalpopoca uses the expression, "they were destroyed"; this we have interpreted as destruction through conquest.

With the sole exception of the "Mictlanquauhtlatlaca" (No. 4), these conquests are confirmed elsewhere in the same source (p. 67), as well as by other data:

Cuautenango: Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis, Torquemada.

Tlapa: Colección de Mendoza, Torquemada, Ixtlilxochitl.

Chicontepec: Colección de Mendoza, Torquemada, Tezozomoc.

Chapa de Mota: Colección de Mendoza, Codex Telleriano-Remensis, Tezozomoc.

Jico: Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis.

Cuicatlán: Anales de Tlatelolco, Colección de Mendoza.

Jaltepec: Anales de Tlatelolco, Colección de Mendoza, Torquemada, Ixtlilxochitl.

[2] "Mictlanquauhtla" has been placed on our map in approximately the same position it occupies on a sixteenth-century map (No. 57, Colección Orozco y Berra); this general location is confirmed by the Epistolario (14: 82) and by Sahagún (4: 26, 28, 134).

The identification of "Ayotochcuitlatlan" is doubtful. Barlow (1947 a) and Meade (p. 300) place the town in the Huasteca, undoubtedly because of a comment of Lorenzana (ftn. 1, p. 342). Nevertheless, the fact remains that this pueblo appears consistently in association with settlements in modern Oaxaca and adjacent Veracruz, for which reason we prefer to identify it with modern Cuicatlán.

[3] The Códice Chimalpopoca reports war with Tiltepec which resulted unhappily for the Triple Alliance; nevertheless, Ixtlilxochitl lists the pueblo as a conquest.

[4] The Spanish translation of the Códice Chimalpopoca uses the expression, "se despobló con pestilencia." This we have interpreted as war rather than disease (cf. Barlow, 1947d, p. 521). As a matter of fact, the three conquests are amply confirmed by other data:

Juchitán: elsewhere in the same source (p. 67), Anales de Tlatelolco, Colección de Mendoza, Torquemada, Tezozomoc, Ixtlilxochitl.

Tehuantepec: Anales de Tlatelolco, Colección de Mendoza, Torquemada Tezozomoc, Ixtlilxochitl.

Amatitlán: elsewhere in the same source (p. 67), Anales de Tlatelolco, Colección de Mendoza, Torquemada, Tezozomoc, Ixtlilxochitl.

[5] We have identified "Apancallecan" and "Apanecan" (see footnote 21, below) with old "Atechancaleca" (Suma, No. 852) which, during the sixteenth century, was 2 leagues from Zacatula, in a zone where the Códice Chimalpopoca reports various conquests. In the Anales de Tlatelolco and the Colección de Mendoza, this pueblo appears in association with settlements in modern Guerrero, as it does likewise in the Matrícula de tributos (5: 73).

[6] "Acatlyyacac" (Códice Chimalpopoca) evidently corresponds to Acatépec (Anales de Tlatelolco), and thus has been identified with modern Acatepec, in Guerrero.

[7] "Totollan" evidently is equivalent to "Tzotzollan" of the Anales de Tlatelolco; both have been identified with modern Sosola, in Oaxaca.

[8] Not identified and not shown on the map. "Tlalocan" was the name of the land of the Olmeca, the "Uixtotin" and the Mixteca (Sahagún 3: 133–134).

[9] Not identified; the Matrícula de tributos (5: 79–80), has it associated clearly with pueblos in the Oaxaca area. It is queried on our map.

[10] This might be "Puetlan," which appears in the Matrícula de tributos (5: 81–82), together with other pueblos in the general vicinity of modern Jico, in Veracruz. It is queried on our map.

[11] Not identified; in view of its association with Jico Viejo and Coyulapa, the location should be near the Puebla-Oaxaca-Veracruz border as shown on our map.

[12] Not identified; presumably in the Isthmus of Tehuantepec area as shown on our map.

[13] "Çihuatlan" and "Huitztlan" may be located in modern Guerrero, on the basis of data in the Suma (Nos. 901, 857 respectively); although for the latter pueblo, an alternative identification (see next paragraph) is equally possible.

Except for "Çihuatlan," all these settlements might be located either in coastal Guerrero or Oaxaca-Chiapas. The Matrícula de tributos (5: 83) suggests that "Huehuetlan," "Huitztlan," and "Maçatlan" lie in the Chiapas area. Tezozomoc (pp. 356, 370, 374) places both "Mazatlan" ("Maçatlan") and "Xolotlan" in Chiapas. On the map, both possibilities are shown, each questioned.

[14] Not identified and not shown on map. However, if the associated pueblos (Nos. 34–38) are situated in modern Guerrero identification with La Huipililla (No. 17) is not unlikely.

[15] See footnote 10, map 16.

[16] Not mentioned in other sources. The name agrees with that of Yautepec, Morelos, but we are inclined to identify the pueblo with San Bartolo Yautepec, Oaxaca, since Ahuizotl was noticeably active in this region.

[17] Not identified; perhaps merely a repetition of "Xolotlan" (No. 37) of the other sources.

[18] Obviously a repetition of "Ayotochcuitlatlan," No. 7, with the name split.

[19] Evidently "Quauhiztla" equates with "Cuauhtlan," since the two pueblos occupy corresponding positions in the lists of the Códice Chimalpopoca and the Anales de Tlatelolco.

[20] We equate "Uizquitlan" and "Mizquitlan," since they appear in corresponding positions in the Códice Chimalpopoca and the Anales de Tlatelolco.

[21] In this passage, the Anales de Tlatelolco do not state clearly that these pueblos were conquered, but elsewere (p. 17) the same source lists Nos. 1, 10–12, 19, and 30 among the conquests. Furthermore, there is confirmation by other sources:

Coyulapa: Códice Chimalpopoca, Colección de Mendoza, Ixtlilxochitl.

Cuautenango, Chicontepec, Chapa de Mota: see footnotes 1, 2, above.

Amatitlán, Juchitán, Tehuantepec: see footnote 4, above.

"Apanecan": Codice Chimalpopoca, Colección de Mendoza; see footnote 5, above.

[22] Not located; the associated pueblos suggest either modern Guerrero or the vicinity of Jico Viejo, in Veracruz. Both possibilities are shown queried on our map.

[23] Not identified; listed between "Xicochimilco" and "Tecuantepec," hence a location either in Veracruz or Oaxaca is likely. Again, both possibilities appear on the map.

[24] Not located on map; both pueblos should be situated either in Guerrero or in Chiapas.

[25] Manifestly a division of the name, "Xicochimalco" (No. 6).

[26] See footnote 11, map 10.

[27] Torquemada places the "Tziuhcoacas" and "Tocpanecas" in the "Provincia y Reinos de Xalisco." This, together with the fact that Veytia has "Quiahuixtlan," presumably the Totonac center of Veracruz, in the general vicinity of Jalisco, leads one to suspect that during the sixteenth century, part of Veracruz was known as Jalisco (cf. ftn. 33, p. 16). In any case, "Tziuhcoacas" and "Tocpanecas" evidently are to be identified respectively with Chicontepec (ftn. 33, p. 267) and Tuxpan.

[28] The "Tlacupan" of Torquemada apparently refers to Tlapa (ftn. 55 p. 275).

[29] See footnote 27, map 14; footnote 37, p. 269.

[30] See footnote 25, map 14. The pueblo appears, queried on our map.

[31] Torquemada (1: 187) writes thus: "Cueçalcuitlapillan, Provincia grande de Gente, y mui Valientes, y haciendoles Guerra no pudo vencerlos . . ." Nevertheless, the pueblo appears among the conquests in the Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza.

[32] Torquemada mentions war, but not conquest. Dibble's dubious interpretation of the Códice en Cruz similarly suggests war with Atlixco.

[33] Tezozomoc's account of the campaigns of Ahuizotl, particularly in the Tehuantepec area, is extremely confused. The same pueblo names are repeated so frequently, in the course of different wars, that the impression is of no more than a series of raids for booty.

[34] Chiluca does not appear as conquered; it was a concentration point for the Mexican forces in a campaign directed against the Otomí zone in the present State of Mexico.

[34a] See footnote 19, map 14.

[35] Tezozomoc appears to refer not to an individual pueblo, but to the people known as Chinantec (see footnote 25, map 14).

[36] "Tuxtecatl" might be identified with either of the pueblos indicated, one in Oaxaca, the other in Chiapas. Both possibilities appear on the map.

[37] Not identified; evidently located somewhere in the Isthmus of Tehuantepec zone as our map indicates.

[38] According to Tezozomoc, these pueblos were prior conquests; they sent embassies to pay tribute and to reiterate their submission to Ahuizotl. "Chiltepec" alone is not identified and does not appear on our map.

[39] Dibble's interpretations of the Códice en Cruz are far from secure. War is implied by the sacrifice of victims of Chicontepec, Tlapa, and from the Zapoteca zone, and such hostilities are confirmed by other data:

Chicontepec and Tlapa: see footnote 1, above.

Zapoteca: Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis, Torquemada, Ixtlilxochitl.

Dibble's interpretation of "Teozapotlan" obviously is more doubtful than any of the others, since he indicates that the glyph bears little resemblance to that of the pueblo with which he identifies it. His interpretation of war with Atlixco has been mentioned above (ftn. 32).

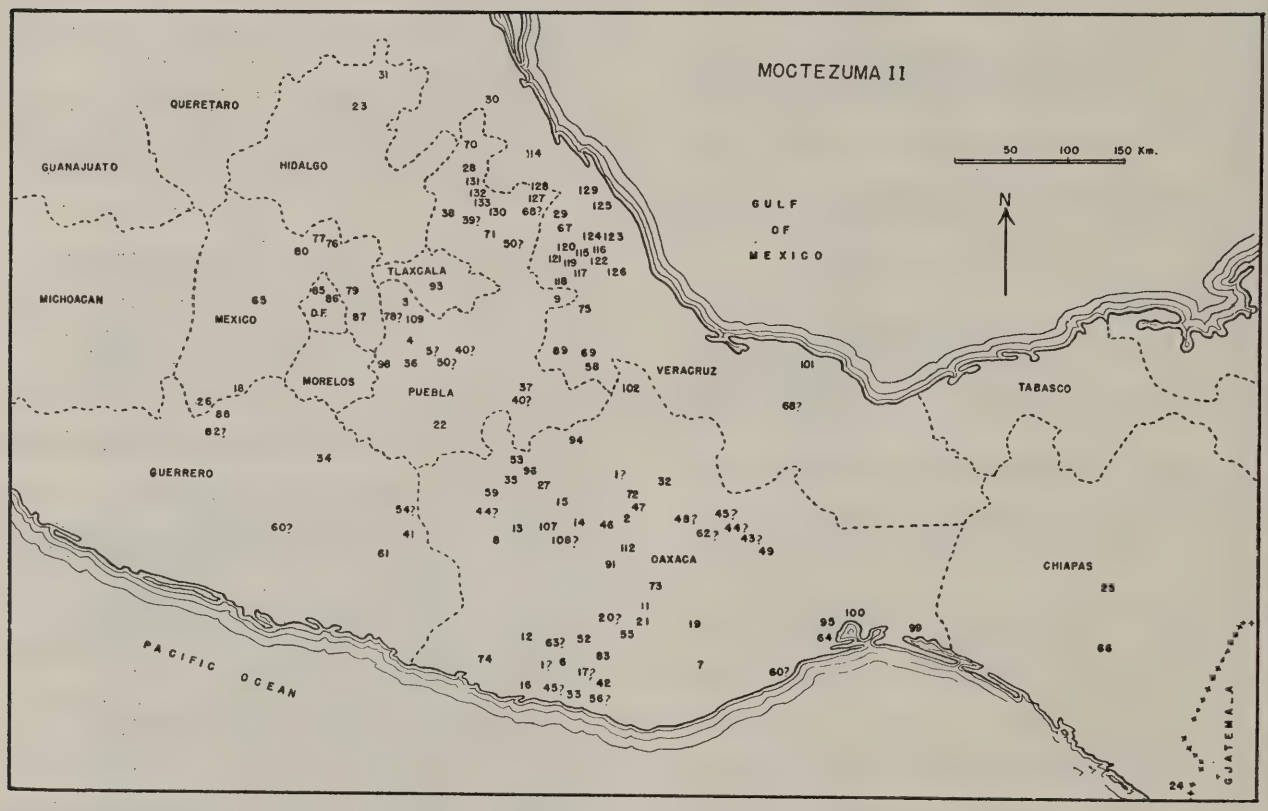
[40] According to Ixtlilxochitl, Netzahualpilli engaged in a campaign against Nautla, with the result that Texcoco gained control of "la tierra baja de los totonaques." The Nautla war is confirmed by the Códice en Cruz (pp. 69–70). In addition, Ixtlilxochitl (2: 272) mentions a campaign occasioned by a rebellion in Chicontepec, as well as war with Atlixco.

These three campaigns are attributed to Texcoco by Ixtlilxochitl. Nevertheless, the Spaniards found a Mexican garrison in Nautla, which implies either Mexican participation in the conquest, or a subsequent shift in control, from Texcoco to Tenochtitlan.

[41] Previous references to Zapotecas (Torquemada, Códice en Cruz) appear to apply to a pueblo (No. 14). Ixtlilxochitl refers to the province, namely the area occupied by the Zapoteca, in modern Oaxaca. The Mixteca alta and the Mixteca baja refer to the zones peopled by the Mixteca, likewise in Oaxaca, but extending into southern Puebla.

[42] In this case, Ixtlilxochitl clearly is speaking of the region known at present as Chiapas.

[43] Not identified. Ixtlilxochitl places this pueblo in the Tehuantepec area, remarking that it was "una de sus ciudades mas populosas y ricas."




Map 18.—Mexican wars: Moctezuma II (1502–20).

(For legend, see pp. 311–317.)

*Legend to map 18*

Mexican wars: Moctezuma II (1502–20). See legend to map 10.

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice Chimalpopoca: | | |
| 1 | Teuctépec [1, 2] | | "Teotepec," Oaxaca. |
| 2 | Itztitlan [1] | | Ixtlán de Juárez, Oaxaca. |
| 3 | Huexotzinco [3] | | Huejotzingo, Puebla. |
| 4 | Atlixco [3] | 60 | Atlixco, Puebla. |
| 5 | Atzomiatenanco [3, 4] | | [San Sebastián] Tenango, Puebla. |
| | Huexotzinco [3] | | See 3. |
| 6 | Icpatépec | | San Francisco Ixpantepec, Oaxaca. |
| 7 | Izquixochitépec [5] | | San Miguel Suchiltepec, Oaxaca. |
| 8 | Tlachquiyauhcas [5] | | Santa María Asunción Tlaxiaco, Oaxaca. |
| 9 | Quimichtlan [5] | 61 | Quimixtlán, Puebla. |
| 10 | Iztactlallocan [5, 6] | | |
| 11 | Macuilloctlan [5] | | Ocotlán de Morelos, Oaxaca. |
| 12 | Centzontepecas [5] | | Santa Cruz Zenzontepec, Oaxaca. |
| 12a | Texoquauhtli [6a] | 63 | |
| 13 | Achiyotlan | | San Miguel Achiutla, Oaxaca. |
| 14 | Çoçollan | | San Jerónimo Sosola, Oaxaca. |
| | Teuhtépec | | See 1. |
| 15 | Nocheztlan | | Asunción Nochixtlán, Oaxaca. |
| 16 | Totoṭépec | | San Pedro Tututepec, Oaxaca. |
| 17 | Tlanitzlan [7] | | |
| 18 | Çoltépec | | Sultepec de Pedro Ascencio Alquisiras, México. |
| | Icpatépec | | See 6. |
| | Izquixochitépec | | See 7. |
| 19 | Quiyauhtépec | | San Bartolo Yautepec, Oaxaca. |
| 20 | Chichihualtatacallan [8] | | Santa Marta Chichihualtepec, Oaxaca. |
| 21 | Texotlan | | Ejutla de Crespo, Oaxaca. |
| 22 | Piyaztlan | | Piaxtla, Puebla. |
| 23 | Ollan [9] | | Molango, Hidalgo. |
| 24 | Huitztlan | | Huixtla, Chiapas. |
| 25 | Tzinacatlan | 67 | Zinacantán, Chiapas. |
| 26 | Tlatlayan | | Tlatlaya, México. |
| 27 | Yancuitlan | | Santo Domingo Yanhuitlán, Oaxaca. |
| 28 | Xicotépec | | Villa Juárez, Puebla, formerly "Xicotepec." |
| 29 | Toztépec | | Toxtepec, Veracruz. |
| 30 | Micquetlan | | Mequetla, Veracruz. |
| 31 | Huexollotlan | | Huejutla, Hidalgo. |
| 32 | Tiiltépec | | San Miguel Tiltepec, Oaxaca. |
| 33 | Nopallan | | Santos Reyes Nopala, Oaxaca. |
| 34 | Tlalcoçauhtitlan | | Tlalcozotitlán, Guerrero. |
| 35 | Texopan | | Santiago Tejúpam, Oaxaca. |
| 36 | Itzyoyocan [10] | | Teyuca, Puebla. |
| 37 | Caltépec | | Caltepec, Puebla. |
| 38 | Panco | | Pancoac, Puebla. |
| 39 | Tlochiyauhtzinco [11] | | Tlayehualancingo, Puebla. |
| 40 | Teochiyappa [12] | | San José Chiapa, Puebla, or Chiapa, Puebla. |
| | Tlachquiyauhco | | See 8. |
| 41 | Malinaltépec | | Malinaltepec, Guerrero. |
| 42 | Quimichtépec | | San Pedro Mixtepec, Oaxaca. |
| | Centzontépec | | See 12. |
| 43 | Quetzaltépec [12a] | | San Miguel Quetzaltepec, Oaxaca. |
| 44 | Cuezcomayxtlahuacan [13] | | San Andrés, San Pedro, or Santiago Ixtlahuaca, Oaxaca. |
| 45 | Çacatépec [14] | 68 | Santa María Zacatepec, Oaxaca, or Santiago Zacatepec, Oaxaca. |
| 46 | Xallapan [15] | | San Raymundo Jálpam, Oaxaca. |
| 47 | Xaltianquizco | | Santa María Jaltianguis, Oaxaca. |
| 48 | Yolloxonecuillan [16] | | |
| 49 | Itzcuintépec | | Santiago Ixcuintepec, Oaxaca. |
| | Iztitlan | | See 2. |

See footnotes on pages 316 and 317.

*Legend to map 18*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Anales de Tlatelolco: | | |
| 50 | Tlatlauhquitépec [17] | | Tlatlauquitepec, Puebla, or La Magdalena Tlatlauquitepec, Puebla. |
| | Tzotzollan | | See 14. |
| 51 | Atl . . .[18] | | |
| | Tecuictépec | 17 | See 1. |
| | Nocheztlan | | See 15. |
| | Totépec | | See 16. |
| | Tlaniztla | | See 17. |
| 52 | Tzolla | | San Francisco Sola, Oaxaca. |
| | Icpatépec | | See 6. |
| 53 | Tlalotépec [19] | | Tlacotepec Plumas, Oaxaca. |
| | Chichiueltatacalan | | See 20. |
| | Texotla | | See 21. |
| | Piaztlan | | See 22. |
| | Mollanco | | See 23. |
| | Uitztlan | | See 24. |
| | Tziuactlan [20] | | See 25. |
| 54 | Tlachinollan [21] | | "Tlachinola," Guerrero. |
| 55 | Amoxtlan | | San Luis Amatlán, Oaxaca. |
| | Xicotépec | | See 28. |
| | Toztépec | | See 29. |
| | Mictlan [22] | | See 30. |
| | Uexotlan | | See 31. |
| | Tiltépec | | See 32. |
| | Nopallan | | See 33. |
| 56 | Tezon quauhtla [23] | 18 | |
| 57 | Teconpatlan [24] | | |
| 58 | Tecpantlayácac [24] | | Tecpatla, Veracruz. |
| | Caltépec tepepan | | See 37. |
| | Teoátl ypantzinco [25] | | See 39(?). |
| 59 | Tlacaxolotlan | | Joluxtla, Oaxaca. |
| | Achtlachinollan | | See 54. |
| 60 | Mazatlan [26] | | Santa Cruz Mazatán, Oaxaca, or Mazatlán, Guerrero. |
| | Ciuatlan [20] | | See 25(?). |
| | Tlachquiyauhco | | See 8. |
| | Malinaltépec | | See 41. |
| | Quichtépec | | See 42. |
| | Cenzontépec | | See 12. |
| | Quiciltépec | | See 43. |
| | Cuezcoma [27] | | |
| | Ixtlauacan [27] | | See 44. |
| 61 | Citlaltépec | | Zitlaltepec, Guerrero. |
| | Xalpan | | See 46. |
| | Xaltiaquizco | | See 47. |
| | Yolloxonecuillan | | See 48. |
| 62 | Izceuitépec [28] | | |
| | Izcuintépec | | See 49. |
| | Iztitlan | | See 2. |
| | Achioteca [29] | | See. 13. |
| | Cozolteca [29] | | See. 14. |
| | Tecuhtepeca [29] | | See 1. |
| | Amantlatlaca [29] | | See 55. |
| | Icpactepeca [29] | 61 | See 6. |
| 63 | Tózac [30] | | |
| | Cuezcoma ixtlauaque [29] | | See 44. |
| | Uexotzinca [3] | | See 3. |
| | Istac tlallocan [29] | | See 10. |
| | Colección de Mendoza: | | |
| | Achiotlan | | See 13. |
| | Çoçolan | | See 14. |
| | Nochiztlan | | See 15. |
| | Tecutepec | 5: 49 | See 1. |
| | Çulan | | See 52. |
| | Tlaniztlan | | See 17. |

See footnotes on pages 316 and 317.

*Legend to map 18*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Colección de Mendoza—Continued | | |
| 64 | Huilotepec | | San Pedro Huilotepec, Oaxaca. |
| | Ycpatepec | | See 6. |
| | Yztactlalocan | 5: 49 | See 10. |
| | Chichihualtatacala | | See 20. |
| 65 | Tecaxic [31] | | Tecaxic, México. |
| | Tlachinoltic | | See 54. |
| 66 | Xoconochco | | Soconusco, Chiapas. |
| | Çinacantlan | | See 25. |
| | Huiztlan | | See 24. |
| | Piaztlan | | See 22. |
| | Molanco | | See 23. |
| | Caquantepec | | See 45. |
| 67 | Pipiyoltepec | | Pilhuatepec, Veracruz. |
| 68 | Hueyapan [32] | | Hueyapan, Puebla, or Hueyapan, Veracruz. |
| | Tecpatlan | | See 58. |
| 69 | Amatlan | | Amatlán, Veracruz. |
| | Caltepec | | See 37. |
| 70 | Pantepec | | Pantepec, Puebla. |
| | Teoacinco [33] | | See 39 (?). |
| 71 | Tecoçauhtla | | Zautla, Puebla. |
| | Teochiapan | | See 40. |
| | Çacatepec | | See 45. |
| | Tlachquiyahuco | | See 8. |
| | Malinaltepec | | See 41. |
| | Quimichtepec | | See 42. |
| | Yzcuintepec | | See 49. |
| | Çençontepec | | See 12. |
| | Quetzaltepec | | See 43. |
| | Cuezcomayxtlahuacan | 5: 50 | See 44. |
| | Huexolotlan | | See 31. |
| | Xalapan | | See 46. |
| | Xaltianquizço | | See 47. |
| | Yoloxpuecuila | | See 48. |
| 72 | Atepec | | San Juan Atepec, Oaxaca. |
| 73 | Mictlan | | San Pablo Villa de Mitla, Oaxaca. |
| | Yztitlan | | See 2. |
| | Tliltepec | | See 32. |
| 74 | Comaltepec | | Santa Elena Comaltepec, Oaxaca. |
| | Çitlaltepec | | See 61. |
| 75 | Quauhtochco | | Huatusco de Chicuéllar, Veracruz. |
| 76 | Tzonpanco | | Zumpango de Ocampo, México. |
| 77 | Xaltocan | | Jaltocán, México. |
| 78 | Huaca [34] | | |
| | Yzteyocan | | See 36. |
| 79 | Acalhuacan [35] | | Texcoco de Mora, México. |
| 80 | Coatitlan | | Cuautitlán de Romero Rubio México. |
| 81 | Huixachtitlan [36] | | |
| | Çoçolan | | See 14. |
| 82 | Poctepec [37] | | Pochote, Guerrero. |
| 83 | Coatlayauhcan | | San Francisco Coatlán, Oaxaca. |
| 84 | Acolnahuac [38] | | |
| 85 | Puputlan | | Popotla, Tacuba, D. F. |
| 86 | Yztacalco | | Ixtacalco, Ixtapalapa, D. F. |
| 87 | Chalcoatenco [38a] | | Chalco de Díaz Covarrubias, México. |
| 88 | Oztoma [38b] | | "Oztuma," Guerrero. |
| 89 | Atzacan | | Atzacan, Veracruz. |
| 90 | Atlan [39] | 5: 51 | |
| | Xoconochco | | See 66. |
| 91 | Tecapotitlan | | Zaachila, Oaxaca, formerly "Teozapotlan." |
| | Historia de los mexicanos por sus pinturas: | | |
| | Zozola | 231 | See 14. |
| | Codex Telleriano-Remensis: | | |
| 92 | Mixteca [40] | | |
| | Cozola | | See 14. |
| | Ycpaltepec | 5: 154 | See 6. |
| | Quimichintepec | | See 42. |
| | Nopala | | See 33. |
| | Tototepec | | See 16. |

See footnotes on pages 316 and 317.

*Legend to map 18*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Codex Telleriano-Remensis—Continued | | |
| | Hayocingo | 5: 155 | See 39. |
| | Ytzlaquetlaloca | | See 10. |
| | Torquemada: | | |
| | Atlixco [3] | 1: 195 | See 4. |
| | Tlachquiauhco | 1: 196 | See 8. |
| | Malinal | 1: 197 | See 41. |
| | Achiotlan | | See 13. |
| 93 | Tlaxcala [41] | 1: 201 | Tlaxcala, Tlaxcala. |
| 94 | Quauhnelhuatlan | 1: 204 | Huautla de Jiménez, Oaxaca. |
| | Provincias Mixtecas | 1: 207 | See 92. |
| 95 | Tecuantepec | | Santo Domingo Tehuantepec, Oaxaca. |
| 96 | Cohuaixtlahuacan | | San Juan Bautista Coixtlauaca, Oaxaca. |
| | Tçoçolan | | See 14. |
| | Tixtecas | 1: 208 | See 2. |
| | Huauhtlan | | See 94. |
| | Tototepec | | See 16. |
| | Tecuantepec | 1: 209 | See 95. |
| 97 | Yopitçinco [42] | | |
| | Itztecas | 1: 210 | See 2. |
| | Itzcuintepecas | | See 49. |
| | Atlixco [3] | | See 4. |
| | Tecuhtepec | | See 1. |
| | Çollan | 1: 211 | See 52. |
| | Mictlan | | See 73. |
| 98 | Quauhquecholla | | Huaquechula, Puebla. |
| | Huexotzincas [3] | | See 3. |
| 99 | Amatlan | | Amatitlán, Oaxaca. |
| | Icpatepecas | 1: 213 | See 6. |
| | Malinaltepec | | See 41. |
| 100 | Izquixochtlan | | Juchitán de Zaragoza, Oaxaca. |
| | Tlaxcaltecas | | See 93. |
| | Huexotzincas [3] | | See 3. |
| | Atlixco [3] | | See 4. |
| | Xuchitepecas | 1: 214 | See 7. |
| | Icpactepecas | | See 6. |
| | Tlachquiauhco | 1: 215 | See 8. |
| | Yopitzincas | | See 97. |
| | Nopallan | | See 33. |
| 101 | Quatzalapan | | Cuetzalapan, Veracruz. |
| 102 | Cihuapohualoyan [43] | | "Cihua," Oaxaca. |
| | Cuezcomaixtlahuacan | | See 44. |
| | Quetzaltepec [44] | | See 43. |
| | Iztactlalocan | 1: 216 | See 10. |
| 103 | Guatemala [45] | 1: 218 | |
| 104 | Nicaragua [45] | | |
| 105 | Verapaz [45, 46] | 1: 219 | |
| | Centzontepec | 1: 228 | See 12. |
| | Tlaxcaltecas [41] | | See 93. |
| 106 | Maçatzintla [47] | | |
| | Çacatepecas | | See 45. |
| | Tezozomoc: | | |
| | Nopallan | 403 | See 33. |
| | Icpactepeccas | | See 6. |
| 107 | Xaltepec | 420 | Magdaleña Jaltepec, Oaxaca. |
| 108 | Cuatzonteccan [48] | | |
| | Tututepec | 429 | See 16. |
| | Quetzaltepec | | See 43. |
| | Huexotzinco [3] | 438 | See 3. |
| 109 | Cholula [3] | | Cholula de Rivadabia, Puebla. |
| | Atlixco [3] | | See 4. |
| | Yanhuitecas | 447 | See 27. |
| | Zozolan | 448 | See 14. |
| | Tuctepec | 454 | See 1. |
| | Coatlan | | See 83. |
| | Tlaxcala [41] | 474 | See 93. |
| | Tlachquiauhco | 491 | See 8. |

See footnotes on pages 316 and 317.

*Legend to map 18*—Continued

| Key No. | Source pueblo | Page | Pueblo identification |
|---|---|---|---|
| | Códice en Cruz: | | |
| | Caltepec [50] | 84 | See 37. |
| | Xaltianquizco [49, 50] | | See 47. |
| | Tlachco [49, 50] | | See 8. |
| 110 | Tamoanchan [49, 50] | 85 | |
| | Huilotepec [49, 50] | 104 | See 64. |
| | Ycpactepec | 105 | See 6. |
| | Quetzaltepec [49, 50] | 106 | See 43. |
| | Tototepec [49, 50] | | See 16. |
| | Tlaxcaltecas [41] | 115 | See 93. |
| | Ixtlilxochitl: | | |
| | Zocolan | 2: 309 | See 14. |
| | Totepec | | See 16. |
| | Atlixco [3] | | See 4. |
| | Yopatepec [51] | 2: 310 | See 6. |
| | Mixtecas | 2: 317 | See 92. |
| 111 | Tzapotecas [52] | | |
| | Yopicas | | See 97. |
| | Tototepecas | | See 16. |
| | Tequantepecas | | See 95. |
| | Coixtlahuacan | | See 96. |
| | Zozolan | | See 14. |
| | Tototepec | | See 16. |
| | Tequantepec | | See 95. |
| | Yopitzinco | | See 97. |
| 112 | Huaxaca | 2: 318 | Oaxaca, Oaxaca. |
| | Tlachquiauhco | | See 8. |
| | Malinaltepec | | See 41. |
| | Iztactlalocan | | See 10. |
| | Izquixochitepec | | See 7. |
| | Tlacotepec | | See 53. |
| | Amantlan | 2: 319 | See 99. |
| | Tlaxcalan [41] | 2: 322 | See 93. |
| | Tetzcuco [53] | 2: 331 | See 79. |
| 113 | Tonacapan [54] | 2: 333 | See 73. |
| | Mitlantzinco | | See 47. |
| | Xaltianquizco | | |
| | Relación de Papantla: | | |
| 114 | Papantla | ---------- | Papantla, Veracruz. |
| | Relación de Jalapa (Paso y Troncoso): | | |
| 115 | Chepultepec | 5: 111 | Chapultepec, Veracruz. |
| 116 | Tepetlan | 5: 118 | San Antonio Tepetlán, Veracruz. |
| 117 | Xalapa | 5: 102–103 | Jalapa Enríquez, Veracruz. |
| 118 | Yzguacan | 5: 122 | Ixhuacán de los Reyes, Veracruz. |
| 119 | Xilotepec [55] | 5: 106 | Jilotepec, Veracruz. |
| 120 | Tlaculula [56] | 5: 108 | Tlacolulan, Veracruz. |
| 121 | Quaquauzintlan [55] | 5: 110 | Coacoatzintla, Veracruz. |
| 122 | Naolingo | 5: 112 | Naolinco, Veracruz. |
| 123 | Acatlan [57] | 5: 113 | Acatlán, Veracruz. |
| 124 | Miaguatlan [57] | 5: 114 | San José Miahuatlán, Veracruz. |
| 125 | Colipa [57] | 5: 115 | Colipa, Veracruz. |
| 126 | Almoloncan [58] | 5: 119 | Almolonga, Veracruz. |
| | Relación de Jonotla (Paso y Troncoso): | | |
| 127 | Xonotla [59] | 5: 128 | Jonotla, Puebla. |
| 128 | Ecatlan [59] | 5: 140 | Ecatlán, Puebla. |
| | Relación de Misantla: | | |
| 129 | Miçantla [58] | ---------- | Misantla Viejo, Veracruz. |
| | Relación de Hueytlalpan: | | |
| 130 | Gueytlalpa [58] | ---------- | Hueytlalpan, Puebla. |
| | Relación de "Matlatlan" y Chila: | | |
| 131 | Matlatlan [58] | ---------- | "Matlatlan," Puebla. |
| 132 | Chila [58] | ---------- | Chila, Puebla. |
| | Relación de Jojupango: | | |
| 133 | Jujupango [58] | ---------- | Jojupango, Puebla. |

See footnotes on pages 316 and 317.

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*Legend to map 18*—Continued

[1] The Códice Chimalpopoca reports that "Teuctépec" and "Itztitlan" were depopulated through "pestilence," which we interpret as war (cf. footnote 4, map 17). Conquest of both pueblos is confirmed elsewhere in the same source (p. 67), as well as by other data:

"Teuctépec": Anales de Tlatelolco, Colección de Mendoza, Torquemada, Tezozomoc.

"Itztitlan": Anales de Tlatelolco, Colección de Mendoza, Torquemada.

[2] Although "Teotepec" apparently does not appear under this name in the 1930 census, it is shown in the Atlas geográfico. The latter places it on the coast of Oaxaca, a location which would accord with Tezozomoc. Nevertheless, the Códice Chimalpopoca, the Anales de Tlatelolco, and the Colección de Mendoza give the impression that the pueblo was situated in north-central Oaxaca, near Sosola. Both possibilities, queried, appear on our map.

[3] These pueblos evidently were involved in war, although there is no report of conquest, except for Huejotzingo (Anales de Tlatelolco).

The Códice Chimalpopoca attributes the campaigns in question to Cuautitlán, despite the fact that the latter apparently was conquered by the Mexicans in the days of Acamapichtli (map 10, No. 11).

Torquemada mentions war with Atlixco and Huejotzingo, as does Tezozomoc, who includes Cholula for good measure; Ixtlilxochitl speaks of war with Atlixco. But all these sources refer to the Triple Alliance. Accordingly, the pueblos are listed here, despite the fact that the Códice Chimalpopoca attributes the campaigns to Cuautitlán.

[4] Identification doubtful; it is suggested simply because Tenango falls within the zone affected by this campaign.

[5] The Códice Chimalpopoca does not attribute these campaigns definitively to Mexico, but there are confirmatory data. Except for "Iztactlallocan," Quimixtlán, and Ocotlán, corroboration is found elsewhere in the same source (pp. 67–68). For the two last-mentioned pueblos, there are no further data, but the others appear as conquests in various sources:

Ixpantepec: Anales de Tlatelolco, Colección de Mendoza, Codex Telleriano-Remensis, Torquemada, Tezozomoc, Códice en Cruz, Ixtlilxochitl.

Suchiltepec: Torquemada, Ixtlilxochitl.

Tlaxiaco: Anales de Tlatelolco, Colección de Mendoza, Torquemada, Tezozomoc, Ixtlilxochitl.

"Iztactlallocan": Colección de Mendoza, Codex Telleriano-Remensis, Torquemada, Ixtlilxochitl.

Zenzontepec: Anales de Tlatelolco, Colección de Mendoza, Torquemada.

[6] See footnote 8, map 17.

[6a] Not identified and not shown on map; probably the same as "Tezon quauhtla" (Anales de Tlatelolco), in which case the pueblo should be located in modern Oaxaca (see footnote 23, below).

[7] Not identified; presumably in modern Oaxaca, at no great distance from the modern pueblos of Tututepec and Sola de Vega. Queried on map.

[8] Identification doubtful; based in part on associated pueblos and in part on the fact that "Chichihualtatacallan," or "chichihual-te-ta-calla" means "lugar de nodrizas" (Penafiel, p. 107), as does modern Chichihualtepec (Leduc et al, p. 253).

[9] We suspect that "Ollan" is Molango, since the two pueblos occupy comparable positions in the lists respectively of the Códice Chimalpopoca and the Anales de Tlatelolco.

[10] "Itzyoyocan" (Códice Chimalpopoca) appears to correspond to "Yztayocan" (Colección de Mendoza); we have identified both with modern Teyuca.

[11] Identification doubtful; we suggest Tlayehualancingo, near Pancoac, with which latter the pueblo appears associated in the Códice Chimalpopoca. However, it likewise is associated with Caltepec (Anales de Tlatelolco) and with Pantepec and Zautla (Colección de Mendoza).

[12] In this instance, there are two possibilities, both pueblos known as Chipa, in modern Puebla. Both appear on the map with an interrogation point.

[12a] Identified, somewhat dubiously. Torquemada places the pueblo near "Cihuapohualoyan," which is securely located, thanks to a sixteenth-century map (footnote 43). However, Tezozomoc couples Quetzaltepec with Tututepec, which suggests coastal Oaxaca.

[13] Identification dubious; possibly, San Andrés, San Pedro, or Santiago Ixtlahuaca, the first two in eastern Oaxaca, the third in the western part of the State. Both possibilities are shown on our map.

However, it is by no means impossible that the pueblo in question should be located near Quetzaltepec, as Torquemada implies, when he remarks that those of "Cuezcomaixtlahuacan" fled from the Mexicans and took refuge in Quetzaltepec.

[14] Two possibilities, both in Oaxaca and both pueblos called Zacatepec, are shown on map 18.

[15] We equate "Xallapan" with "Xalpan," since the two pueblos occupy corresponding positions respectively in the lists of the Códice Chimalpopoca and the Anales de Tlatelolco. Both have been identified with modern Jálpam, in Oaxaca.

[16] Not identified; the associated pueblos suggest a location in modern Oaxaca. Queried on our map.

[17] Two possibilities, both in Puebla, and both pueblos called Tlatlauquitepec, are shown on the map.

[18] The name obviously incomplete.

[19] We assume that "Tlalotépec" (Anales de Tlatelolco) is the same as Tlacotepec (Ixtlilxochitl); both have been identified with modern Tlacotepec.

[20] It is evident that "Tziuactlan" and possibly "Ciuatlan." (Anales de Tlatelolco) correspond to "Tzinacatlan" (Códice Chimalpopoca) and "Çinacantlan" (Colección de Mendoza); all have been identified with modern Zinacantán in Chiapas.

[21] Not identified, although approximate location is shown on the map, on the basis of data in the Suma (No. 725).

[22] "Mictlan" and "Micquetlan" evidently are equivalent; they occupy corresponding positions respectively in the lists of the Anales de Tlatelolco and the Códice Chimalpopoca; both have been identified with modern Mequetla, in Veracruz.

[23] Not identified; probably the same as "Texoquauhtli" (No. 12a) of the Códice Chimalpopoca (see footnote 6a, above). The association with Nopala (Anales de Tlatelolco) suggests a location in modern Oaxaca. Queried on our map.

[24] Possibly Nos. 57 and 58 represent variant spellings of the same name the latter, at least, may be identified with modern Tecpatla, in Veracruz.

[25] Not identified; unfortunately, at this point the lists of the Códice Chimalpopoca and the Anales de Tlatelolco do not run parallel, hence equivalents cannot be suggested. Nevertheless, association with Caltepec, suggests possible reference to the pueblo dubiously identified as Tlayehualancingo (No. 39).

[26] Two possibilities are suggested, one in Oaxaca and one in Guerrero; both are shown on map 18.

[27] Obviously "Cuezcomayxtlahuacan" (No. 44), with the name divided.

[28] Not identified; the associated pueblos suggest a possible location in modern Oaxaca. Queried on our map.

[29] The Anales de Tlatelolco use the expression, "perished," which we assume to indicate conquest. In any event, there are corroborative data:

Achiutla: Códice Chimalpopoca, Colección de Mendoza, Torquemada.

Sosola: elsewhere in the Anales de Tlatelolco (p. 17), Códice Chimalpopoca, Colección de Mendoza, Historia de los mexicanos por sus pinturas, Codex Telleriano-Remensis, Torquemada, Tezozomoc, Ixtlilxochitl.

"Teotepec:" see footnotes 1, 2, above.

Amatlán: elsewhere in the Anales de Tlatelolco (p. 18).

Ixpantepec: see footnote 5, above.

Ixtlahuaca: elsewhere in the Anales de Tlatelolco (p. 18) (see footnote 27, above), Códice Chimalpopoca, Colección de Mendoza, Torquemada. For identification see footnote 13, above.

"Iztactlallocan:" see footnote 5, above, and footnote 8, map 17.

[30] Not identified; queried on our map. The context (Anales de Tlatelolco) suggests a location in modern Oaxaca, not far from Sola. There is no definitive mention of conquest, but of rebellion and flight of population; the conquest is not confirmed in other sources.

[31] In the Colección de Mendoza, Tecaxic appears isolated. Probably it can be placed safely in the State of Mexico, on the basis of associated pueblos in the campaigns of Tizoc (map 16, No. 1).

[32] Two possibilities, both pueblos called Hueyapan, one in Puebla and one in Veracruz, are shown on the map. We incline toward the former, since the town appears on the list with "Pipiyoltepec" (No. 67), in Veracruz, close to the Puebla border.

[33] Not identified; association with Caltepec, Pantepec, and Zautla, suggests possible reference to dubiously identified Tlayehualancingo (No. 39) of the Códice Chimalpopoca. See footnotes 11 and 25, above.

[34] Not located; apparently to be sought in the modern State of Mexico, or along the Mexico-Puebla frontier. Queried on our map.

[35] See footnote 53, below, and footnote 4, map 11.

[36] Not located.

[37] See footnote 20, map 14.

[38] Not located.

[38a] See footnote 3, map 11.

[38b] See footnote 19, map 14.

[39] Not located. In the Matrícula de tributos (5:88), "Atlan" appears in such association as to suggest a location in northern Veracruz.

[40] See footnote 41, map 17. The Codex Telleriano-Remensis does not claim conquest of the Mixteca, but refers to an accident in which a large number of Mexican troops drowned, en route to that zone.

However, conquests in the Mixteca are attested by the Códice Chimalpopoca, the Anales de Tlatelolco, the Colección de Mendoza, the Codex Telleriano-Remensis itself, Torquemada, Tezozomoc, and Ixtlilxochitl.

[41] The sources mention war, but not conquest.

[42] Province located in the southern part of the modern state of Guerrero. Not shown on our map.

[43] Not identified with any modern pueblo; on our map it is shown in the same position it occupies on a sixteenth-century map (No. 57, Colección Orozco y Berra).

[44] In the passage cited, Torquemada does not claim Quetzaltepec as a conquest, although he does so later (1: 215–216). Confirmation is provided by the Códice Chimalpopoca, the Anales de Tlatelolco, the Colección de Mendoza, and Tezozomoc.

[45] Torquemada has the Mexicans penetrate Guatemala and Nicaragua, as does Ixtlilxochitl (2: 318). This alleged campaign remains vague, without details concerning individual pueblos or battles. In fact, the report is so unconvincing, that these "conquests" have not been entered on our map; and the territory mentioned in the passage of Ixtlilxochtil has not been included in our list of conquests, since his claims are bombastic and grandiose rather than specific.

[46] Verapaz refers to a sixteenth-century (Torquemada 2: 53) and modern area of Guatemala.

[47] Not identified, not shown on our map; Torquemada remarks vaguely that it lies in Chichimec territory.

[48] Not identified; the Tezozomoc text implies it may not be far from Jaltepec (map 18, No. 107), where we have placed it with an interrogation point.

[49] In a number of cases, Dibble's interpretations of the Códice en Cruz are extremely dubious. For example, the glyph for Jaltianguis shows human tracks instead of the sign for sand; that for Tlaxiaco is lacking the drops of water, which Dibble suggests may be effaced. With respect to "Tamoanchan," Dibble himself states that the interpretation cannot be defended. To boot, the conquest of Huilotepec is little more than a suggestion. The interpretation of conquest of Quetzaltepec and Tututepec is even more doubtful, since Dibble leans on other sources, without being able to demonstrate concrete evidence in the Códice en Cruz.

[50] The conquests of Caltepec, Jaltianguis, and Tlaxiaco are confirmed for the Triple Alliance, although the Códice en Cruz claims them for Texcoco:

Caltepec: Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza.

Jaltianguis: Códice Chimalpopoca, Anales de Tlatelolco, Colección de Mendoza, Ixtlilxochitl.

Tlaxiaco: see footnote 5 above.

With respect to the other pueblos the situation may be summarized as follows:

"Tamoanchan:" Not shown on our map. Meade (p. 89) identifies this pueblo with the ruins of "Tamtzan" or "Tamchan," in the Huasteca. Dibble suggests conquests in the Huasteca or Totonacapan may be intended.

*Legend to map 18*—Continued

As a matter of fact, at this time, there is slight indication of Mexican aggression in the Huasteca, although Mequetla (No. 30) probably lies on the borders of that province; on the contrary, map 18 indicates a wide range of conquests in northern Totonacapan.

Huilotepec: conquest confirmed by the Colección de Mendoza.

Quetzaltepec: see footnote 44, above.

Tututepec: conquest confirmed by Códice Chimalpopoca, Anales de Tlatelolco, Codex Telleriano-Remensis, Torquemada, Tezozomoc, Ixtlilxochitl.

[51] "Yopatepec" (Ixtlilxochitl) evidently corresponds to "Icpatepec" and "Icpaltepec" of the other sources; identification with Ixpantepec, in Oaxaca, is indicated.

[52] Not shown on our map. See footnote 41, map 17.

[53] Chavero (in Ixtlilxochitl, ftn. 1, 2: 331) states that other chronicles do not mention this war between Tenochtitlan and Texcoco; he considers it a fabrication to justify the alliance of the Texcocan leader, Ixtlilxochitl, with the Spaniards.

Nevertheless, the Colección de Mendoza lists "Acalhuacan" (No. 79) among the Mexican conquests. And with respect to the dispute which centered about the succession in Texcoco, Torquemada (1: 221-227) gives pretty much the same version as Ixtlilxochitl, describing active Tenochtitlan participation in this dynastic controversy.

[54] Obviously Totonacapan. Not shown on our map because a province rather than a pueblo. Ixtlilxochitl refers to the frequent uprisings against the Triple Alliance.

[55] The *relación geográfica* (Paso y Troncoso 5: 106, 110) states that Jilotepec and Coacoatzintla were subjected by Tlacolulan prior to their becoming tributaries of Moctezuma II.

[56] Tlacolulan was tributary to Mexico in the days of Moctezuma II. Although the corresponding *relación* does not date the conquest by the Mexicans, evidently it took place during the reign of the younger Moctezuma—for Jilotepec and Coacoatzintla (see preceding note) state that they were tributaries of Tlacolulan, until they were subjected by Moctezuma.

[57] Acatlán, Miahuatlán and Colipa evidently were conquered by Moctezuma II. The *relación* states merely that the same situation holds for them as for Naolinco, and the latter clearly was subjected by the younger Moctezuma.

[58] The respective sources indicate that these pueblos were tributaries of Moctezuma II, without stating when they passed under Mexican control. They do not appear in previous lists of conquests and have been entered on map 18, so as to give the panorama as a whole in the days of the younger Moctezuma. In any case, it seems highly probable that they were conquered at the same time as the other pueblos of the same region, that is, by Moctezuma II.

[59] See ftn. 59, p. 278.

## APPENDIX C

# VEGETATION

Most of this appendix is dedicated to the catalog of our herbarium collection, following which will be found a list, prepared by Modesto González, of the trees and lianas he considers characteristic of *monte alto.*

## HERBARIUM CATALOG

In order to facilitate reference in the text, plant materials are listed numerically; following the catalog is an index to genera.

### NUMERICAL LIST

Number and common Spanish (or hispanicized Mexican) name appear first, followed by (*a*) Totonac name, with translation in parentheses; (*b*) taxonomic determination, together with any data we may have concerning growth habits or local introduction; (*c*) utility; (*d*) informants; and (*e*) remarks.

In some cases, the Spanish name is not known to informants; in others, the Totonac name either is not known or was not recorded. Translation of the native name is given for some plants, but we rather slighted this aspect; with patience and a good informant, many more terms could be translated. Occasionally, informants know neither name nor use of certain plants; usually, specimens were collected regardless, since negative evidence often is of interest.

When several different individuals have been consulted and their information is at variance, each statement is followed by the initials of the informant. With three exceptions, the full names appear under *d*; but three friends assisted so frequently that they are cited by initials only: Modesto González (MG), María Loreto (ML), and Ana Méndez (AM).

Many specimens were collected in duplicate or in triplicate, at different times of the year; nevertheless, they appear under the same number. On the whole, Totonac classification accords well with that of the taxonomist and rarely do informants consider two different species one and the same plant. There is, however, one extreme case to the contrary (No. 202), in which plants of three distinct families were identified, by the same informant, upon different occasions, as one and the same. In justice, it must be said that he professed uncertainty, saying that he did not know the blossom, but that "the leaf looked the same."

In some cases, different specimens of the same species have been listed under separate numbers. This is particularly true when two different Spanish names were given. Moreover, as with the cottons, occasionally it appeared preferable to list individual specimens separately, since we were uncertain how distinct they would prove to be taxonomically. If all the data are in agreement, we have treated the plant under a single number, and the other numbers have been suppressed. For example, the same white-fibered cotton appears as Nos. 8, 12, 36, and 89, but our information concerning it has been summarized under No. 8.

Virtually all plant determinations have been made by Dr. Harold Emery Moore, Jr., of the Bailey Hortorium, and to him we are enormously indebted for a long and painstaking study of our sizable collection. As will be seen below, he has submitted a number of problematical specimens for independent determination or for confirmation.

1. *Cabellito de angel; flor de mechuda.*
   *a.* ištutujún (*flor de chuparosa*).
   *b. Calliandra houstoniana* (Mill.) Standl. Grows wild in *monte.*
   *c.* No use.
   *d.* MG, Rosalino González.
   *e.* Same as No. 96.

2. *Cordoncillo.*
   *a.* ¢o?kote; sókot.
   *b. Piper* sp., possibly *Piper berlandieri* C. DC. Grows wild; about same height as orange tree.
   *c.* After childbirth, used in bath and parturient drinks a tea made from the root. Tea likewise drunk to prevent paleness (OV). Following childbirth, instead of water,

woman drinks tea made from the boiled root. Boiled leaf serves as soap; bathers in sweat bath whip body lightly with branches (MG). Root or small branches cut in pieces and made into a tea; given parturient following ejection of afterbirth (MdL).

*d.* Otilia Villegas, MG, Manuel de la Luz.

**3.** Unknown to informant.

*a.* pulúš.

*b. Solanum verbascifolium* L. Volunteer in abandoned maize fields; not a *monte* plant.

*c.* Leaves used to scour dishes. Chili seed, artificially germinated prior to planting, wrapped in the leaves.

*d.* AM.

**4.** Unknown to informants.

*a.* pisís.

*b.* Araceae family, possibly *Xanthosoma* sp. Cultivated.

*c.* Edible corms a Lenten dish (p. 156).

*d.* AM, Otilia Villegas.

**5.** Unknown to informant.

*a.* čapáwate.

*b. Porophyllum ruderale* (Jacq.) Cass. Determined by S. F. Blake. Volunteer in maize field.

*c.* Edible (p. 161).

*d.* AM, ML.

**6.** *Yerba mora.*

*a.* mú¢tututi.

*b. Solanum nigrum* L.

*c.* Edible (p. 161) (AM, RG); not edible, once seeds have formed (ML). Also medicinal, as treatment for *disipela* ([*sic*] erysipelas? "Inflammation, skin turns red, feverish"). Entire plant ground, salt and lime juice added; three times a day, mixture applied as a compress, covered with castor leaf. In one case, effective when compress of eskúptama? (No. 164) unsuccessful (ML).

*d.* AM, Rosalino González, ML.

**7.** Unknown to informant.

*a.* sinatuán.

*b. Schoepfia schreberi* Gmel. Grows wild.

*c.* As remedy, plant boiled, and pimples and boils (*granos*) bathed four times with liquid (OV). Woman 3 months pregnant bathes, either in house or sweat bath, with liquid in which leaf has been boiled; this informant not aware that plant is a remedy for pustules (MG).

*d.* Otilia Villegas, MG.

**8.** *Algodón.*

*a.* pánʌmak? (generic term); white lint cotton usually called sasnapa·pa.

*b. Gossypium hirsutum* L. Cultivated shrub, perennial, white fiber. Seed removed easily (BH), with difficulty (CPR).

*c.* Fiber for textiles; seed sometimes used in cooking.

*d.* Specimens collected at houses of Basilio Hernández, Carmen Pérez Reyes, Francisco Abundio Xochigua, Paulino Xochigua.

*e.* Same as Nos. 12, 36, 89.

**9.** *Algodón.*

*a.* pánʌmak? (generic term); brown lint cotton called esta·nalt, or štal?nat.

*b. Gossypium hirsutum* L. var. *punctatum* (Schumacher) J. B. Hutchinson. Cultivated shrub, perennial; narrow leaf, brown fiber.

*c.* Same use as preceding.

*d.* Specimens collected at houses of Paulino Xochigua, Basilio Hernández, Lázaro Santes. One specimen brought from Papantla by Francisca Santes.

*e.* Same as Nos. 11, 111, 118.

**10.** *Chote.*

*a.* pušni?.

*b. Parmentiera edulis* DC. Wild tree, found in *monte alto* and in house clearings.

*c.* Riding and pack animals eat the fruit. Children may eat the ripe fruit, raw; not a standard dish. Tree, trimmed to shrublike proportions, used to dry laundry (MM). Wood used for baseball bats (AB).

*d.* Mercedes Morales, Antonio Bautista.

**11.** See No. 9.

**12.** See No. 8.

**13.** *Cordonzuelo; cuerno suelo* (*sic*).

*a.* ¢u?pin.

*b. Acacia cornigera* (L.) Willd. Grows wild.

*c.* "Spines" inhabited by insects whose eggs are ground and applied to dental cavity. Treatment causes tooth to break and facilitates extraction (RG). Useful only as firewood (MG).

*d.* Rosalino González, MG.

**14.** *Ceiba.*

*a.* púčuti (*sic*) (pochote?).

*b. Ceiba pentandra* (L.) Gaertn. Large tree, of *monte alto.*

*c.* Fiber not used (MG); wood seldom utilized since it rots rapidly (DS).

*d.* MG, Donato Santes.

**15.** *Orozuz: tabardillo.*

*a.* išlakastapu maštansiks.

*b. Lantana camara* L. Volunteer, along trails and in abandoned maize fields.

*c.* Infants bathed in water in which a spray has been boiled, as protection against magical *malviento.* One of the seven plants boiled to prepare a bath which cures either children or adults from "fright" occasioned by the dead. Same bath also used to treat paleness and lack of appetite.

*d.* MG.

*e.* On two different occasions, same informant gave distinct Spanish names; on one, unable to remember Totonac term. Same as No. 50.

**16.** Unknown to informant.

*a.* lúkwati.

*b.* Araceae family, possibly *Philodendron,* sp. A vine; climbs *monte* trees.

*c.* Leaf used to wrap meat.

*d.* MG.

**17.** Unknown to informant.

*a.* mojawa.

*b. Abutilon notolophium* A. Gray. Grows wild in *monte.*

*c.* Used as firewood, and for roof withes; further utilized as altar ornament.

*d.* MG.

18. *Manzanilla.*

*a.* išlikatapačat.

*b. Malvaviscus arboreus* Cav. Wild, along trails and in abandoned maize fields.

*c.* Children may eat the fruit. May be used as a substitute for one of the plants ordinarily preferred for the bath of seven herbs, noted above (No. 15) (MG). Leaf ground and added to drinking water for ailing fowl (RG).

*d.* MG, Rosalino González.

19. Specimen missing.

20. *Mozote amarillo.*

*a.* Not recorded.

*b. Bidens pilosa* L. var. *radiata* Sch.-Bip.

*c.* Remedy for jaundice: leaves boiled with marigold (*flor de muerto*, No. 261) and liquid drunk.

*d.* MG.

*e.* Same determination as *mozote blanco* (No. 325), but different from *mozote amarillo* (No. 110). Presumably, therefore, this is *blanco*, not *amarillo*, as indicated above, and incorrectly is credited with attributes of latter.

21. *Capulín.*

a. mantákiwi?; manta·qkiwit; matánkiwi?.

*b. Ardisia escallonioides* Schlecht. & Cham. Wild; grows to ca. 3 m.

*c.* Edible; fruit eaten especially by birds (AM). Used as base of fermented beverage and black dye. Wood serves for roof withes (MG). Preferred support for vanilla vine "since its leaves are cool" (AM).

*d.* AM, MG.

*e.* See Nos. 41, 85, same Spanish name.

22. Canceled.

23. *Vainilla pompona.*

*a.* Not recorded.

*b. Vanilla pompona* Schiede. Determined by C. Schweinfurth. Wild vine.

*c.* Sometimes used to pollinate cultivated vanilla.

*d.* Lorenzo Xochigua.

24. *Tomate.*

*a.* pa·kłča.

*b. Lycopersicon esculentum* Mill. Volunteer in milpas.

*c.* Fruit important in diet; salable. Febrifuge: raw tomato placed on castor leaf, latter then applied to abdomen.

*d.* MG.

*e.* Fruit red; yellow variety unknown.

25. *Jonote blanco.*

*a.* lawakašúnuk.

*b. Heliocarpus americanus* L. Large shrub found wild along arroyo banks and in humid ground.

*c.* Bark soaked in water 8 days to loosen inner fiber; latter used as cordage (tumpline; filler for cradles, carrying frames; also to tie corn-husk wrapping on cakes of brown sugar).

*d.* MG.

*e.* Same as No. 107.

26. *Cojón de gato.*

*a.* wa·stakat.

*b. Tabernaemontana citrifolia* L. *Monte* shrub.

*c.* Used to support vanilla vine. Remedy for swellings and chilblains (*sabañón*): leaf smeared with lard, seared on hot coals, then applied to affected part. Remedy for pustules (MG).

*d.* Rosalino González, MG.

*e.* Not to be confused with other plants of same Spanish name (Nos. 138, 173).

27. *Santa María; flor de angel.*

*a.* išaškuɬikulan (*tabaco del santo*).

*b. Pluchea odorata* (L.) Cass. Volunteer in abandoned milpas.

*c.* Remedy for stomach ache; roasted leaves rubbed on abdomen.

*d.* MG.

28. *Palo de volador.*

*a.* sakát?kiwi.

*b. Zuelania roussoviae* Pittier. Large *monte alto* tree.

*c.* Wood used for roof *cintas* (fig. 23, *d*, *i*); split poles for house walls; trunk as pole for Volador dance.

*d.* MG.

29. *Quelite; quitacalzón.*

*a.* jú·ks?ka; jukška?; jukška.

*b. Phytolacca icosandra* L. Volunteer in maize fields.

*c.* Edible (p. 161); as condiment (p. 157). Used as green dye; not fast color (AM).

*d.* Rosalino González, Otilia Villegas, MG, AM.

30. *Pimienta.*

*a.* ukún; u?ukún.

*b. Pimenta officinalis* Lindl. *Monte* tree.

*c.* Pole used as digging stick (MG). Tea made of dried leaves (EX); green leaves boiled to make "coffee." Seasoning for chicken or turkey (p. 158). Used as body whip in sweat bath. On Palm Sunday, men carry a spray (MG).

*d.* MG, Elena A. de Xochigua.

31. *Barbas de camarón.*

*a.* snukut?.

*b. Cuscuta corymbosa* R. & P. var. *stylosa* (Choisy) Engelm. Determined by T. G. Yuncker. Wild; parasite.

*c.* Remedy for jaundiced color; plant boiled; liquid drunk and used as bath.

*d.* Severa Xochigua, MG.

32. *Ajengibre.*

*a.* piníkuču? (pin, *chile;* kuču, *aguardiente*).

*b. Zingiber officinale* Roscoe. Cultivated in house clearings.

*c.* Tuberous rhizomes the base for an alcoholic "punch" (p. 164). Plant used as body whip in sweat bath. Leaves boiled, liquid used as bath. Tea made of boiled rhizome is remedy for *bombo* (unidentified complaint characterized by body swelling and yellowness of skin); for unspeci-

fied ailments; for parturient after sweat bath; and for giving strength to a woman who tires easily while walking.

*d.* Rosalino González, Otilia Villegas, MG.

**33.** *Semilla de culebra.*

*a.* líkučupalalua.

*b. Hibiscus abelmoschus* L. Cultivated in house clearings or maize fields.

*c.* Remedy for rabies and snake bite: victim drinks water in which seed has been boiled (MG). For snake bite: dried seed chewed and juiced swallowed (LX); chewed seed placed over bite (NM).

*d.* MG, Lorenzo Xochigua, Nemesio Martínez.

*e.* Said also to be called *la bella Elvira* (Juan Castro). Not to be confused with No. 216, same Spanish name.

**34.** *Campana; tulipán.*

*a.* Unknown to informant.

*b. Datura candida* (Pers.) Pasquale. Cultivated in house clearings.

*c.* Flowers for altar decoration. Remedy for swelling: leaves braised on coals and applied to affected part.

*d.* MG.

**35.** *Jazmín cimarrón.*

*a.* Unknown to MG.

*b. Clerodendron fragrans* Vent. var. *pleniflora* Schauer. Considered "wild"; evidently naturalized.

*c.* No utility.

*d.* Name given by unspecified informant; plant unknown to MG.

**36.** See No. 8.

**37.** *Puán.*

*a.* puyâm (*sic*).

*b. Muntingia calabura* L. Wild tree; grows in cultivated and abandoned maize fields.

*c.* Raw fruit edible, salable in Papantla (MG). Remedy for "red" measles: fruit boiled in clean vessel free of chili and lard; liquid drunk (AM, MG). Remedy for measles: leaves boiled and liquid drunk (MG); leaves mashed and ground in water, liquid drunk. Same remedy for smallpox (AM).

*d.* MG, AM.

**38.** *Lelekes* (*sic*).

*a.* liliak; kiwilílak; lilʌk.

*b.* Five specimens: 4, *Leucaena pulverulenta* (Schlecht.) Benth; 1, *L. glauca* (L.) Benth. Wild near houses and in maize fields.

*c.* Tender leaves eaten raw (AM). Young pod eaten entire; once mature, only pith and seeds edible (p. 163) (MG).

*d.* AM, MG.

*e.* Same as 196; 196*a*, considered cultivated, identified as *L. glauca* (L.) Benth.

**39.** *Cola de alacrán.*

*a.* taskuyu túwan.

*b. Heliotropium angiospermum* Murr. Wild; yellow flower said to look like scorpion's tail.

*c.* Remedy for magical infirmity, *malviento*: children so afflicted bathed in water in which ground leaves have been boiled (AM). Plant of no utility (MG).

*d.* AM, MG.

**40.** *Ajillo.*

*a.* ašušmayak.

*b. Cydista aequinoctialis* (L.) Miers. *Monte alto* vine.

*c.* Of little use; serves as substitute ingredient in bath of seven herbs (see No. 15) (MG). Considered "hot," hence may be used to combat chills. Fruit eaten by wild pheasant (EX).

*d.* MG, Elena A. de Xochigua.

**41.** *Capulín.*

*a.* išlakastápu tamaknî (*ojo de pescado*).

*b. Eugenia capuli* (Schlecht. & Cham.) Berg. Wild.

*c.* Fruit edible; used also as black dye (MG). Remedy for mild stomach ache: tea made from leaves of *capulín* and *guayabo* (No. 326); when taken, coffee should be omitted (AM).

*d.* MG, AM.

*e.* Totonac distinguish three kinds of *capulín* by name (Nos. 21, 41, 85); two (Nos. 41, 85) identified as same species. See No. 85, considered distinct by informants.

**42.** *Tortilla de los sapos.*

*a.* iščočíčak.

*b. Cissampelos pareira* L. Vine; volunteer in abandoned maize fields.

*c.* Remedy for magical *malojo* of infants: "sherry wine" added to leaves, and entire body anointed.

*d.* MG.

*e.* Same as No. 70.

**43.** *Algodón.*

*a.* pánamʌkˀ.

*b. Gossypium barbadense* L. Cultivated perennial; tall shrub; white fiber.

*c.* See No. 8.

*d.* Rosalino González.

**44.** Specimen missing; same as No. 78.

**45.** *Muitle.*

*a.* ¢iˀis, si·is.

*b. Jacobinia spicigera* (Schlecht.) L. H. Bailey. Known as *muitle morado* (EX), *colorado* (ML, SP), or *rojo* (MG), as distinguished from *negro* (MG), *verde* (SP), and *azul* (ML.).

*c.* Foliage used as red or pink dye (p. 243); effective only in dark of moonless night (PP). Leaves boiled with clothes of small children for protection against infirmity locally known as *alferecía* (EX). Flower boiled to dye *coyoles* (palm nuts sold as confection in Papantla) (MG).

*d.* ML, Silvestre Patiño, MG, Pedro Pérez, Elena A. de Xochigua.

**46.** *Chuchurutana.*

*a.* ¢u¢uyúkswan.

*b. Jacquinia aurantiaca* Ait.

*c.* Fresh blossoms boiled with cloth as yellow dye (MG). Dry flowers boiled to produce yellow dye; fast color (ML). As protection against rats, small bunch

of sprays with leaves upward tied on cord supporting frame on which food is placed (PP).

*d.* MG, ML, Pedro Pérez.

*e.* Not used as fish poison (cf. Standley, p. 1106).

47. *Copalillo.*

*a.* pum.

*b. Protium copal* (Schlecht. & Cham.) Engl. Large *monte alto* tree.

*c.* Remedy for larvae (moyokuili) deposited in fly bite: leaf applied to bite with resin of *copalillo;* following day, leaf removed together with "worm" which adheres to resin (EX).

*d.* Elena A. de Xochigua.

*e.* Specimen said to be *copal,* not *copalillo* (MG). See also No. 205, same Spanish name. It may be noted that the Maya term for *copal* is pom (Ponce 2:414).

48. *Yerba negra.*

*a.* šunyialípasni?; šúnalipati; šanalipan; šu·nialípasni? (*escoba amarga*).

*b. Hyptis verticillata* Jacq.

*c.* Used as bath for persons ill of undiagnosed ailments; boiled leaves rubbed on entire body, then thrown on trail to transfer illness to first passerby. Substitute plant in bath of seven herbs (No. 15), for magical infirmities, *malviento* and *malojo* (MG). Remedy for magical *malviento:* child's body whipped lightly with fresh spray (ML).

*d.* MG, ML.

49. *Bejuco de chile.*

*a.* pinimáiyak; pin?nimáiyak (pin, *chile;* máiyak, *bejuco*). Spanish term may be translation of native name.

*b. Salmea scandens* (L.) DC. *Monte* vine.

*c.* Used as fish poison (p. 80).

*d.* MG.

50. See No. 15.

51. *Tomate de guajolote; tomatillo de guajolote.*

*a.* išipišpak; išpišpak' ča?čawilá.

*b. Passiflora foetida* L. var. *hastata* (Bertol.) Mast. Volunteer in abandoned maize fields. Fruit said to resemble turkey's wattle, hence name.

*c.* Raw fruit eaten "like a pomegranate."

*d.* MG.

*e.* Same as No. 116.

52. *Nigua del puerco.*

*a.* Not recorded.

*b. Paullinia tomentosa* Jacq. Volunteer in abandoned milpas and along trails; not a *monte* plant.

*c.* No utility (MG); fruit eaten (EX).

*d.* MG, Elena A. de Xochigua.

*e.* Same Spanish name applied to No. 52*a*

52*a.* *Nigua del puerco.*

*a.* šaksispášni.

*b. Vernonia tortuosa* (L.) Blake. Volunteer in abandoned maize fields and along trails; not a *monte alto* plant.

*c.* No utility.

*d.* MG.

*e.* Same Spanish name applied to No. 52.

53. Unknown to informants.

*a.* púštuku; pu·štaku.

*b. Verbesina lindenii* (Sch.-Bip.) Blake. Determined by S. F. Blake. Grows by roadsides and in maize fields.

*c.* Boiled leaves serve as soap; used in bath of seven herbs (No. 15). Women who turn yellow after childbirth, given a tea prepared by boiling entire plant, and are bathed in liquid (MG). Stem used for toy known as *tronador* (similar to popgun) (MM).

*d.* MG, Mercedes Morales.

54. *Bajatripa.*

*a.* pinks·uat; pínksswat.

*b. Rivina humilis* L. Small shrub wild along trails.

*c.* Used in bath of seven herbs (No. 15) in place of *cedro* (No. 219); also used as bath to treat magical *malviento,* and to cure night sweats following magical contact with dead.

*d.* MG.

55. *Flor de mechuda.*

*a.* tu?¢on, ¢u?¢on.

*b. Caesalpinia* sp. Large shrub cultivated in garden; not a *monte* plant. Two kinds, one with red and one with yellow flowers.

*c.* Cough remedy: leaves boiled and liquid drunk. Flowers used to adorn altar.

*d.* MG.

*e.* See also No. 115, identified as to species.

56. *Ortiga.*

*a.* kájni?.

*b. Cnidoscolus multilobus* (Pax) I. M. Johnston. Wild.

*c.* Cotton soaked in milky sap and placed on tooth to cure toothache (MG). As cure for witchcraft, pieces of obsidian (*espada del trueno*) are ground to powder and mixed with well-chopped *ortiga;* mixture placed on affected part and renewed from time to time. Removed paste thrown away, since it carries with it part of spell (NM).

*d.* MG, Nemesio Martínez.

57. *Anona de mono; anona del monte.*

*a.* išákšikiwimušni?; išakčitkiwimušni.

*b. Annona globifera* Schlecht. Wild in *monte alto;* and volunteer in abandoned milpas.

*c.* Fruit sometimes eaten, "but it is small."

*d.* MG.

*e.* This the only annona we collected, except for an unidentified species of *Guatteria* (No. 321). In addition, Pedro Pérez distinguishes two others: *anona blanca* and *anona colorada;* fruit of the latter said to be "red, inside and out." Both, he says, do not occur in the *monte,* but "where people have lived." He also knows the *guanábana,* but considers it quite distinct from the annonas; it, also, is not found in the *monte.*

58. *Malva; malva de cubierta.*

*a.* malva (*sic*) (MG); no Totonac name (BX).

*b. Corchorus siliquosus* L. Weed along trails and in maize fields (NM, BX).

*c.* Febrifuge: leaves or entire plant well boiled; liquid strained and used as enema particularly for infants. Febrifuge: boiled leaves ground and prepared as poultice; mixed with salt and alcohol and applied to abdomen (MG).

*d.* MG, Bernabé Xochigua, Nemesio Martínez.

*e.* Same as Nos. 77, 354.

59. *Barba de guajolote.*

*a.* iškalčíšit čawilá; iskalčíšit' tawilá?; iškatišitčawila?.

*b.* Three specimens; 2, *Lobelia berlandieri* A. DC.; 1, *Lobelia cliffortiana* L. Wild along arroyo and in humid ground.

*c.* No utility.

*d.* MG.

*e.* Same as No. 170.

60. *Berenjena.*

*a.* listokošat (*bastón de vieja*); išlištəkwəčate.

*b. Solanum laurifolium* Mill. Wild. Troublesome weed in maize field.

*c.* Tender leaves boiled, drained, and rubbed with salt over shoulders and legs of day-old infants to prevent *alforra* (ailment diagnosed by constant crying; thought to result from parents' having eaten chili) (EX, MG). Dubiously, as bath for newborn infants to ward off lunacy (LP). Leaves well-washed with soap and rubbed on body of newborn infant to clean him. Shoots of plant boiled in clean pot and given orally to infant as internal cleansing (ML).

*d.* Elena A. de Xochigua, MG, Luis Patiño, ML.

61. *Estribillo.*

*a.* išlišsputništilán.

*b. Trichilia havanensis* Jacq. Wild tree.

*c.* As bath to cure magical *malviento;* as body whip in sweat bath (AM). Bath in water in which leaves have been boiled is remedy for chills and fever, such as malaria, not for *malviento* (MG). Grated bark mixed with water and swallowed as cure for drunkenness (mm.).

*d.* AM, MG, Mercedes Morales.

62. *Espino blanco.*

*a.* akaləqəčək?.

*b. Adelia barbinervis* Schlecht. & Cham. *Monte* tree.

*c.* Useful as firewood (MG). Poultry eats seeds (AM).

*d.* AM, MG.

63. *Bejuco.*

*a.* Not recorded.

*b. Ipomaea* sp. Wild vine, yellow flower.

*c.* Sometimes eaten by swine.

*d.* AM.

64. Name unknown.

*a.* snatpu.

*b.* Not determinable. Wild *monte* tree (MG); wet seed covering exudes "soap" (AM).

*c.* No utility.

*d.* MG, AM.

65. *Ubero.*

*a.* napá·jkiwi?.

*b. Coccoloba schiedeana* Lindau. *Monte alto* tree.

*c.* Bark used as mouthwash to cure oral irritation (AM).

*d.* MG, AM.

66. *Piojo de caballo.*

*a.* Not recorded.

*b. Triumfetta semitriloba* Jacq. Volunteer in abandoned maize fields and along trails.

*c.* No utility.

*d.* AM, MG.

67. *Laurel.*

*a.* keska.

*b.* Not determinable. Wild tree; "grows anywhere." Two kinds recognized by informants: *blanco* and *amarillo* (AM).

*c.* Leaves used in bath to treat fever (AM). Not medicinal (MG). Flower utilized as altar decoration (MG).

*d.* AM, MG.

*e.* Although MG believes this to be *laurel blanco,* it may be *amarillo;* see No. 130.

68. Unknown to informants.

*a.* šipalínak.

*b.* Not determinable. Wild shrub.

*c.* Birds eat ripe fruit (AM); not medicinal but used as body whip in sweat bath (MG).

*d.* AM, MG.

69. *Pata de vaca; patevaca (sic); pata de toro (blanca).*

*a.* špipilá kiwi šasáqaqa (*mariposa palo blanco*).

*b. Bauhinia divaricata* L. *Monte* shrub. Informants distinguish two kinds: *blanca* (white) and *negra* (dark, black).

*c. Blanca* used for roof poles and withes; *negra* (no specimen) considered remedy for diarrhea.

*d.* MG.

70. See No. 42.

71. *Frijol ancho.*

*a.* šiuyúmin; šiú?min; šuyumín; šuyúmin *arribeño.*

*b.* Six specimens: 5, *Phaseolus lunatus* L.; 1, *Phaseolus* sp. Seed identified by Hugh Cutler as *P. lunatus* L. Cultivated.

*c.* Edible.

*d.* MG, Lorenzo Xochigua.

*e.* Same as Nos. 279 and 304.

72. *Acoyo blanco, oloroso.*

*a.* jinánsnapapa; ji·nani; jínan.

*b. Piper* sp. Wild along arroyo banks; grows to 2 m.

*c.* Condiment (pp. 154, 157, 160). Medicinal: after childbirth, women bathe with water in which leaves have been boiled; men never use *acoyo* in bath. Four times during first month of life, beginning fourth or eighth day, infants likewise bathed. *Acoyo colorado* (No. 184) said to be preferable for baths, but scarce; accordingly the *blanco,* always abundant, is substituted.

*d.* MG.

*e.* Of four specimens collected, one said to be cultivated (Rutilio Olmos). Remedy for pustules and hives: four lukewarm baths with water in which the following have been boiled: leaves of *ciruelo* (presumably, No. 292).

*pusulucuate* (No. 106), and *acoyo* (kind unspecified); preferably, a handful of mud added (ML).

73. *Bejuco blanco.*

*a.* sakáka máiyak (sakáka, *blanco;* máiyak, *bejuco*).

*b. Ipomaea mutabilis* Lindl. *Monte alto* vine; volunteer in abandoned maize fields and along trails.

*c.* Purge: individual to be treated extends arms, and vine cut to corresponding length. Stem chopped, pounded with wooden mallet, mixed with water; liquid strained and drunk (MG). Stem boiled and liquid taken as purge (NM).

*d.* MG, Nemesio Martínez.

*e.* Formerly more popular than at present.

74. *Epazote de la mula.*

*a.* ikstaqni *mula* (*sic*).

*b. Amaranthus spinosus* L.

*c.* Fodder (MG). Remedy for horses, donkeys, mules with bowel and kidney stoppage: plant boiled and liquid given beast (CR).

*d.* MG, Cecilio Ramírez.

75. *Epazote criollo.*

*a.* stáni?.

*b. Chenopodium ambrosioides* L. Cultivated in house clearing, or maize field.

*c.* Popular condiment (pp. 152, 155–160, 162). Remedy for stomach ache: tea made of boiled leaf (MG, AM). Remedy for intestinal parasites: strong tea of *epazote*, mint (*hierbabuena*), or *capulin* (presumably No. 41) (AM). To hasten birth, *epazote* tea drunk during labor (ML).

76. *Tacote.*

*a.* Not recorded.

*b.* Not determinable; Compositae family. Cultivated.

*c.* Used only as altar decoration.

*d.* MG.

77. See No. 58.

78. Unknown to informants.

*a.* aqua?u; aquau; awa?u.

*b. Bixa orellana* L. Cultivated in house clearings.

*c.* Remedy for smallpox and measles: seed rubbed in water and liquid drunk (LX, MG). Remedy for whooping cough: spinelike bristles removed from seeds; latter stirred in water to release color; liquid drunk. Infant sucks rag moistened with remedy (MM).

*d.* Lorenzo Xochigua, MG, Mercedes Morales.

*e.* Not used locally as dye.

79. *Ramón.*

*a.* Not recorded.

*b. Trophis racemosa* (L.) Urb. Volunteer in maize fields.

*c.* Preserves made from fruit (MG). Sprays cut for fodder (MG, EX, FAX).

*d.* MG, Erasmo Xochigua, Francisco Abundio Xochigua.

*e.* Same as No. 149.

80. *Huele de noche, blanco.*

*a.* skawiləjɔ́?; iškawiʌoc'ko? (*nixtamal de garza*).

*b. Cestrum nocturnum* L. Wild shrub. Informants distinguish two types: *blanco* and *prieto.*

*c.* Bath made from boiled leaves (MG, EX). Also used in bath of seven herbs (No. 15). Ambiguous reference implies use as abortifacient: tea (called *agua de tiempo*) made of flowers or leaves of white-fruited *huele de noche* mixed with honey of native bee; drunk by pregnant woman (ML). Also used against night sweats occasioned by fright from dead (*asombro de muerte*) (MG).

*d.* MG, Elena A. de Xochigua, ML.

*e.* Same as No. 341.

81. *Mirto.*

*a.* makánkačawat?; makánkačawate.

*b. Salvia coccinea* Juss. ex Murr.

*c.* Used as substitute in bath of seven herbs (No. 15).

*d.* MG.

82. Unknown to informant.

*a.* zacatečiči (*sic*).

*b. Calea zacatechichi* Schlecht.

*c.* Remedy for bilious disorders.

*d.* Elena A. de Xochigua.

83. *Espuma de mar.*

*a.* Not recorded.

*b. Ammi majus* L. Cultivated in gardens; brought from Papantla.

*c.* Ornamental only.

*d.* Cecilia García.

84. *Palo de agua.*

*a.* ka·pa?; kʌ́p?a; kʌ́pa?a; kʌ́pa? (Mexicano: tamalcahuite, atamalcahuite).

*b.* Three specimens: 1, *Dendropanax arboreus* (L.) Dec. & Planch.; 2, not determinable. Latter definitely not *Dendropanax;* Dr. Moore suspects both may be Euphorbiaceae. *Monte alto* tree.

*c.* Remedy for swelling: leaf laid on coals, then placed hot over affected part.

*d.* MG, Elena A. de Xochigua.

*e.* Same as Nos. 135, 223.

85. *Capulín.*

*a.* aka·lasni?; ka·lasni.

*b. Eugenia capuli* (Schlect. & Cham.) Berg. Wild.

*c.* Fruit edible; sometimes sold. Used also as black dye. Wood serves for roof poles and withes (MG). Not a favored support for vanilla vine, since the shrub is "hot." Flowers popular with bees (AM).

*d.* MG, AM.

*e.* See also No. 41; same species, but considered distinct by Totonac.

86. *Estafiate.*

*a.* sta·weya?.

*b.* Not determinable.

*c.* Remedy for cough, common cold, earache, and magical *malviento* (EX). Remedy for aching ribs (MG).

*d.* Elena A. de Xochigua, MG.

*e.* No details concerning preparation.

87. *Cacahuapaxtle; maravilla.*

*a.* ma·stančuluk?.

*b. Hamelia erecta* Jacq. Wild shrub.

*c.* Wounds washed with water in which leaf has been well boiled (MG). Remedy for pustules: bathed in hot

liquid in which *capulín* (presumably No. 41) and *cacahuapaxtle* have been boiled; then rubbed with a mixture of sulfur and lime juice (ML). Plant serves as support for vanilla vine (MG).

*d.* MG, ML.

88. *Anis; hinojo.*

*a.* anis (*sic*).

*b.* *Foeniculum vulgare* Mill. Cultivated in maize fields.

*c.* *Seasoning* (pp. 153–155, 160).

*d.* MG.

*e.* Same as No. 296.

89. See No. 8.

90. *Zapote cabello.*

*a.* akčišit jaka; aktišit jaka.

*b.* *Licania platypus* (Hemsl.) Fritsch. Tall slender tree; *monte alto;* sometimes planted.

*c.* Fruit eaten; occasionally sold at time of All Souls' Day (LX). Seeds formerly eaten: split, boiled, dried in sun, and ground. Wood rots rapidly; sometimes used for fences (AM).

*d.* Lorenzo Xochigua, AM.

*e.* Same as No. 137.

91. *Chipila.*

*a.* čipilan (*sic*).

*b.* *Crotalaria longirostrata* Hook. & Arn. Cultivated from seed.

*c.* Edible (pp. 162, 169).

*d.* AM.

*e.* See No. 359, same Spanish name.

92. Not known to informant.

*a.* λpopoko.

*b.* Specimen missing. *Monte* plant, found also in maize fields; grows to ca. 2 m.

*c.* Remedy for pustules: leaves foam "like soap" when rubbed on eruption.

*d.* AM.

93. *Lechuguilla* (BX); not known to informant AM.

*a.* lišonča?an.

*b.* *Sonchus oleraceus* L. (AM). Troublesome weed in maize fields (BX).

*c.* Edible (p. 161) (AM). No utility (BX).

*d.* Bernabé Xochigua, AM.

*e.* Same as No. 356.

94. *Cuchara.*

*a.* No Totonac name.

*b.* Specimen missing. Cultivated gourd.

*c.* Dried fruits used as receptacles (pp. 137, 212).

*d.* AM.

95. Unknown to informant.

*a.* kiwištapu (kiwi, *palo;* štapu, *frijol; frijol de árbol*).

*b.* *Cajanus cajan* (L.) Millsp. Cultivated in gardens.

*c.* Edible (pp. 157, 168).

*d.* AM.

*e.* Apparently not of recent introduction.

96. See No. 1.

97. *Tepejilote.*

*a.* litánpa?.

*b.* *Chamaedorea oblongata* Mart. Determined by L. H. Bailey. *Monte* plant.

*c.* Foliage used to decorate altar; roots made into chocolate beater (fig. 29, *b*); sprays as body whip in sweat bath.

*d.* MG.

98. *Ojite.*

*a.* ju·šapu?; ju·ksapu.

*b.* *Brosimum alicastrum* Sw. Large tree found only in *monte alto.*

*c.* Edible fruit (p. 163); leaves as fodder.

*d.* MG, Elena A. de Xochigua.

*e.* It is said that in time of famine, the Totonac once subsisted on *ojite* (MG).

99. *Palo de leche.*

*a.* tasámanit kiwi.

*b.* *Sebastiana* sp. (?). *Monte alto* tree; grows 6 to 8 m. tall.

*c.* Fish poison (p. 80).

*d.* MG.

100. *Jonote colorado.*

*a.* ¢uć́košunuk? (¢uć́q, *colorado*).

*b.* *Hampea integerrima* Schlecht.

*c.* Inner bark used green as cordage, to tie bundles of brown sugar and to tie palm altar ornaments; used also in making cradles, tumplines.

*d.* MG.

101. *Frijol largo.*

*a.* See p. 135 for discussion of names.

*b.* Specimen missing. Cultivated.

*c.* Edible.

*d.* MG, Lorenzo Xochigua.

102. *Mostaza.*

*a.* mostasa (*sic*).

*b.* *Brassica nigra* (L.) Koch. Cultivated in house clearing and maize field; considered native.

*c.* Seeds a remedy for unspecified illness (MG). Seeds burned and smoke blown on victims of magical *malviento* (NM). For same ailment, one bathes in water in which plant has been rubbed (LX). Cough remedy for children: oil of *mostaza* seed heated and rubbed on chest, which then is covered with flannel cloth (LX).

*d.* MG, Nemesio Martínez, Lorenzo Xochigua.

103. *Maíz; maizena; escoba.*

*a.* No Totonac name.

*b.* Two specimens: one, *Sorghum vulgare* Pers.; another, *Sorghum vulgare* Pers. var. *technicum* (Koern.) Fiori & Paoletti. Cultivated; seeds tossed into maize fields (MG). Wild (SP).

*c.* Seeds removed and remaining plant serves as broom (MG).

*d.* MG, Silvestre Patiño.

*e.* Same as No. 226.

104. *Quelite colorado.*

*a.* sáwa šaλsóqo; sawa?; ¢a?wa.

*b.* Four specimens; 2, *Amaranthus hybridus* L.; 2, *A. dubius* Mart. Volunteer in maize fields; occasionally cultivated. Red flower and stem said to distinguish this

from *quelite blanco* (No. 105) which has green blossom and stalk.

*c.* Edible (p. 161).

*d.* MG.

*e.* See also No. 105.

**105.** *Quelite blanco.*

*a.* sáwa saqáqa (sáwa, *quelite;* saqáqa, *blanco*).

*b. Amaranthus hybridus* L. Green stem.

*c.* Same use as No. 104.

*d.* MG.

**106.** *Pusulucuate; pushulucuate cimarrón.*

*a.* aqʔpásas; išaqʔpasás číči (aqʔpásas, *de perro*).

*b.* Cucurbitaceae family; possibly *Apodanthera* sp. Determined by L. H. Bailey. *Monte alto* (?) vine; weed in maize fields.

*c.* Seeds eaten "like pomegranate" (MG); fruit not eaten (LX). Remedy for pustules and hives (ML) (see No. 72).

*d.* MG, Lorenzo Xochigua, ML.

**107.** See No. 25.

**108.** *Matanza.*

*a.* Not recorded.

*b. Stellaria ovata* Willd. Grows wild, along trails and in maize fields.

*c.* Remedy for "fright" (*espanto*): entire body rubbed [with leaves?] and "sherry wine."

*d.* MG.

**109.** *Camote amarillo.*

*a.* išlilakamanikentamaknís (said to mean *veneno de pescado* (?); tamaknís, *pescado*).

*b.* Two specimens: one, *Dioscorea macrostachya* Benth.: the other, *Dioscorea* sp. *Monte* vine.

*c.* Tuber used as fish poison (p. 80).

*d.* MG.

*e.* Same as No. 144.

**110.** *Mozote amarillo.*

*a.* Not recorded.

*b.* Two specimens: one, *Sclerocarpus uniserialis* B. & H.; the other, *S. schiedeanus* B. & H. Wild. Cf. No. 20.

*c.* Remedy for jaundice: one bathes with water in which plant has been boiled.

*d.* MG.

**111.** See No. 9.

**112.** *Chilillo.*

*a.* čilío (*sic*).

*b. Rourea glabra* H. B. K. *Monte alto* vine.

*c.* Used as foundation hoop for cradle, carrying frame, and hanging frame on which food stored. Also as quirt, roof withes.

*d.* MG.

*e.* Same as No. 154.

**113.** *Moradilla; siempreviva.*

*a.* ta·npíšwakakatʻ.

*b. Zebrina pendula* Schnizl. *Monte* plant.

*c.* Remedy for diarrhea: leaves rubbed; dropped in boiling water; sugar added; liquid drunk (MM).

*d.* MG, Mercedes Morales.

**114.** *Culo de puerco.*

*a.* tapasíkiwi.

*b. Croton reflexifolius* H. B. K. Shrub; volunteer in abandoned maize fields and along trails.

*c.* Remedy for pimples around mouth: tender leaves cut and bitter sap from leaf-stem junction applied (AM, MG). Treatment for wounds: washed with hot water in which leaves have been boiled (MG).

*d.* AM, MG.

**115.** *Mechuda.*

*a.* Not recorded (see No. 55).

*b. Caesalpinia pulcherrima* (L.) Sw. Cultivated in gardens.

*c.* Decorative flower. Remedy for common cold and whooping cough: flowers boiled and hot liquid drunk.

*d.* Elena A. de Xochigua, MG.

*e.* See also No. 55.

**116.** See No. 51.

**117.** *Jazmín.*

*a.* Not recorded.

*b. Bourreria huanita* (La Llav. & Lex.) Hemsl. Cultivated in gardens; grown from root.

*c.* Decorative flower.

*d.* Pedro Pérez.

**118.** See No. 9.

**119.** *Culantro de zopilote.*

*a.* Not recorded.

*b. Apium leptophyllum* (Pers.) F. Muell. Wild.

*c.* No utility.

*d.* MG.

**120.** *Mirasol.*

*a.* pučičinišánat (čičini, *sol;* šánat, *flor*). Cf. No. 344.

*b. Cochlospermum vitifolium* (Willd.) Spreng. Cultivated in gardens, from cuttings.

*c.* Decorative flower.

*d.* Donato Santes.

**121.** *Pichoco cimarrón.*

*a.* pomačita (*cubierta de machete*).

*b. Erythrina herbacea* L. Wild tree. Very like edible *pichoco* (No. 284) but with flower lighter-colored.

*c.* No utility.

*d.* MG.

**122.** Unknown to informant.

*a.* akašman.

*b. Manfreda* sp. Volunteer along trails; not a *monte* plant; grows to ca. 1.5 m.

*c.* No utility.

*d.* MG.

**123.** *Muite; cocomuite; cocuitle; muiti; muites.*

*a.* No Totonac name.

*b. Gliricidia sepium* (Jacq.) Walp. Cultivated shrub or small tree; introduced about 15 years ago.

*c.* Cuttings planted as living fence (MG). Flower reputedly edible but not eaten locally (EX). Leaves used as febrifuge (LP).

*d.* MG, Elena A. de Xochigua, Luis Patiño.

*e.* Each informant gives different Spanish names.

124. *Cahuayote.*
*a.* popúyo.
*b. Gonolobus niger* (Cav.) R. Br. Determined by R. E. Woodson, Jr. *Monte* vine; sometimes cultivated in maize field or garden.
*c.* Fruit edible (p. 163).
*d.* AM.

125. *Zapote prieto.*
*a.* sáwal.
*b. Diospyros ebenaster* Retz. Tree grown from seed in maize field or garden.
*c.* Edible fruit.
*d.* MG.

126. Unknown to informant.
*a.* tan·taj.
*b. Philodendron radiatum* Schott. *Monte* plant.
*c.* Root formerly used as coiled filler of carrying frame.
*d.* MG.

127. *Zapote domingo.*
*a.* No Totonac name.
*b. Mammea americana* L. Grown from seed in maize field or garden; introduced ca. 1900.
*c.* Fruit edible.
*d.* MG.

128. *Papatla.*
*a.* łtakasakna; staqátsekna; łtakátseakna (seakna, *plátano*).
*b. Heliconia schiedeana* Kl. Wild along arroyo banks; sometimes grown from root stock.
*c.* Leaves used to wrap *púlacles* (p. 154). Also used to line and cover box in which maize seed is germinated.
*d.* MG.

129. *Galán.*
*a.* Not recorded.
*b. Brunfelsia americana* L. Cultivated in garden from seed.
*c.* Ornamental.
*d.* Elena A. de Xochigua.

130. *Laurel blanco.*
*a.* keska.
*b. Nectandra salicifolia* (H. B. K.) Nees. Wild tree, 15 to 20 m. tall.
*c.* Poles used for house walls. Favored support for vanilla (MG), although *capulín* (No. 21) considered better (PP). Used as altar decoration to assuage Virgin's grief on Good Friday (FG). Of no medicinal use (MG); tea of *laurel blanco* taken to relieve labor pains (EX) (see *e*, below).
*d.* MG, Pedro Pérez, Filiberta González, Elena A. de Xochigua.
*e.* Confusion concerning medicinal properties; according to MG, it is *laurel amarillo* (possibly No. 67) which is used by parturient.

131. *Bejuco colorado.*
*a.* slúlu·mayak; slulumáiyak.
*b.* Two specimens: one, *Melloa populifolia* (DC.) Bur.; the other, *Melloa* sp. *Monte alto* vine; runs along ground, producing neither leaves nor flowers; or climbs, bearing leaves and yellow blossoms. Former more useful: stem longer and more pliable.
*c.* This liana an acceptable substitute for *bejuco real* (No. 133) to lash roof frame, thatch, and wall poles. Also used for woven filler of hanging frame, on which provisions stored.
*d.* MG.
*e.* Same as No. 335.

132. *Zacual cimarrón.*
*a.* kiwípoka?; kiwípoke?.
*b. Enallagma* sp. Small *monte* tree; found chiefly along arroyos.
*c.* Fruit hollowed, dried, corked; used as container for gunpowder.
*d.* MG.

133. *Bejuco real.*
*a.* lišwilákat'; lišwilakat, lišwil tat.
*b. Cydista potosina* (K. Schum. & Loes.) Loes. *Monte alto* vine.
*c.* The preferred lashing for house frame, thatch.
*d.* MG.

134. *Acoyo blanco.*
*a.* kónsapu.
*b. Pothomorphe umbellata* (L.) Miq. Volunteer along trails, arroyo banks, and in maize field. Distinguished from *acoyo colorado* (No. 184) as being odorless and inedible.
*c.* Remedy for swelling: leaf placed on baking plate or directly on coals, made into ball, rubbed between hands, then opened and spread on swelling.
*d.* MG.
*e.* See No. 72, same Spanish name, but pungent odor.

135. See No. 84.

136. *Cordón de Jesús.*
*a.* Unknown to informant.
*b.* Specimen missing.
*c.* Used to decorate altar.
*d.* MG.

137. See No. 90.

138. *Cojón de gato.*
*a.* kalušnánkiwi.
*b. Thevetia peruviana* (Pers.) Schum. Wild; found in *monte* or abandoned maize fields.
*c.* Used as roof poles for thatched house; as support for vanilla vine.
*d.* MG.
*e.* Not to be confused with other plants of same Spanish name (Nos. 26, 173).

139. Unknown to informant.
*a.* kalšókes; kaλ?šokes.
*b. Eryngium deppeanum* Schlecht. & Cham. Found near patches of grass; not a *monte* plant.
*c.* Whooping cough remedy: root well boiled; liquid cooled and drunk.
*d.* MG.

**140.** Unknown to informant.

*a.* Unknown to informant.

*b.* *Epidendrum condylochilum* Lehm. & Kränz. Determined by C. Schweinfurth.

*c.* No utility.

*d.* MG.

**141.** *Bazo de caballo.*

*a.* išmakpasakawaiu (*tochón* [old, cold tortilla] *de caballo*); makpása-kawayo.

*b.* *Capparis baducca* L. *Monte* shrub.

*c.* No utility (MG). Remedy: root grated, mixed with alcohol, and paste applied to body over spleen; burns and cannot be endured long (BX).

*d.* MG, Bernabé Xochigua.

*e.* Same as No. 343.

**142.** Unknown to informant.

*a.* Unknown to informant.

*b.* *Bletia purpurea* (Lam.) DC. Determined by C. Schweinfurth.

*c.* No utility.

*d.* MG.

**143.** Unknown to informant.

*a.* makšešetkiwi (*cascabel*, "because the seeds rattle").

*b.* Not determinable. Shrub found in *monte*, abandoned maize fields; "grows anywhere."

*c.* No utility.

*d.* MG.

**144.** See No. 109.

**145.** *Gordolobo.*

*a.* kɔnɸeɸélaks: kɔ·nɸiɸilaɸ.

*b.* *Bocconia frutescens* L.

*c.* Remedy for ringworm of scalp (*tiña*): leaves soaked in alcohol and affected parts bathed. Remedy for tuberculosis: leaves boiled; liquid drunk and used as bath.

*d.* MG.

*e.* Same as No. 225.

**146.** *Cresta del gallo.*

*a.* išakčičilikit' pûyu? (*cresta del gallo*).

*b.* *Dorstenia contrajerva* L.

*c.* Toothache remedy: root grated, and liquid placed with cotton on ailing tooth. Small girls make a "necklace" by splitting stem; tied at back of neck, with fleshy leaf hanging pendantlike in front.

*d.* MG.

**147.** *Camote blanco.*

*a.* ɸokósničat (*rodilla de la vieja*).

*b.* Four specimens: one, *Dioscorea floribunda* Mart. & Gal.; one, probably *D. convolvulacea* Cham. & Schlecht.; two, *Dioscorea*, sp. Determined by C. V. Morton.

*c.* Fish poison, presumably prepared as is No. 109.

*d.* MG.

**148.** *Calabaza.*

*a.* akpasas.

*b.* *Cucurbita* sp. Determined by L. H. Bailey. Wild.

*c.* No utility.

*d.* MG.

*e.* Same as No. 253.

**149.** See No. 79.

**150.** *Yerba dulce.*

*a.* saksitúan.

*b.* *Lippia dulcis* Trev.

*c.* Cough remedy: leaves boiled with leaf of avocado; half cup drunk. Same tea, without avocado and with addition of wild honey, remedy for stomach ache (MM), and for menstrual cramps (EX).

*d.* Mercedes Morales, Elena A. de Xochigua.

**151.** *Flor de mayo.*

*a.* No Totonac name.

*b.* *Plumeria rubra* L. Cultivated, from cuttings, in house clearing.

*c.* When in bloom, used in magical cures; at other times, marigold (*flor de muerto*, No. 261) substituted (ML). Body "cleansed" (ML) with necklace made by stringing blossoms so that stem engages with center of previous flower; sometimes different sections formed by blossoms of distinct color. Similar strands used as altar decoration (MG).

*d.* ML, MG.

**152.** *Ebano.*

*a.* ak'ʔti.

*b.* Probably *Bumelia persimilis* Hemsl. *Monte alto* tree.

*c.* A source of chicle; latex collected in same way as from *zapote chico* (No. 191). Mixed with that from latter and sold in Papantla.

*d.* MG.

*e.* See also No. 349, which informants consider distinct.

**153.** *Chanacol.*

*a.* šiwiš·íʔ.

*b.* *Bombax ellipticum* H. B. K. Grown in garden, from cuttings; white or deep rose blossoms.

*c.* Flowers for altar ornament.

*d.* MG.

*e.* When planted in house clearing, (rose?) *chanacol* believed to have harmful effect on daughters of family, who "will not marry properly but will go off with some man" (Elena A. de Xochigua).

**154.** See No. 112.

**155.** *Lengua de gato.*

*a.* stimakat'místun (*lengua de gato*).

*b.* *Solanum lanceifolium* Jacq. Wild along trails.

*c.* No utility.

*d.* MG.

**156.** *Chápiso* (*sic*).

*a.* čápis.

*b.* Two specimens: one, *Syngonium podophyllum* Schott; the other, probably *Philodendron* sp. *Monte* vine; "grows anywhere."

*c.* Fruit edible but little used (RG). Aerial root used for baskets (p. 226), coiled filler of hanging frame (p. 226), and formerly to encase demijohns. Root scorched in corn-husk blaze to permit removal of skin; inner root "very white" and pliable.

*d.* Rosalino González, MG.
*e.* By informants, considered same as No. 269.

157. *Pito.*
*a.* makšpit'kiwi; makšpit'kiwi; makašpíkiwi (makšpit': to whistle, by putting fingers to mouth).
*b. Psychotria trichotoma* Mart. & Gal.
*c.* Used for toy whistle. Short length of stem cut; inner portion pushed part way out of bark. Placed below lip and blown on.
*d.* MG.
*e.* Same as No. 183.

158. *Caña de puerco.*
*a.* iš·čankatpašni.
*b. Costus spicatus* (Jacq.) Sw. Wild along arroyo banks.
*c.* Stalks chewed as refreshment. Considered febrifuge.
*d.* MG.

159. Unknown to informant.
*a.* iškapat linaka'; iškapat linake'.
*b. Acalypha schlechtendaliana* Muell. Arg. Wild in humid ground or along arroyo.
*c.* Used as body whip in sweat bath.
*d.* MG.

160. *Frijol.*
*a.* sikinɬu'.
*b. Phaseolus lunatus.* Determined by H. C. Cutler. Wild vine; volunteer in abandoned maize field.
*c.* Beans not edible. Wild pheasants eat flowers.
*d.* MG.

161. *Café.*
*a.* kapé (*sic*).
*b. Coffea arabica* L. Cultivated and volunteer.
*c.* Total output locally consumed as beverage.
*d.* MG.

162. *Granada del monte; amapola silvestre.*
*a.* pupílam; pupílan.
*b. Passiflora serratifolia* L. Wild vine; "grows anywhere."
*c.* Fruit edible; not sold, although said to be salable in Papantla.
*d.* MG.
*e.* Same as No. 217.

163. *Pitaya de ardilla.*
*a.* išluwášiɬtaya.
*b.* Specimen missing. Wild; "grows anywhere"; climbs trees.
*c.* Ripe fruit edible; resembles prickly pear.
*d.* MG.

164. Unknown to informants.
*a.* skúptama; eskúptama'; skúptama'.
*b. Portulaca pilosa* L. Volunteer in maize fields.
*c.* Remedy for swelling and erysipelas (inflammation, accompanied by fever): plant ground on metate; salt added; paste applied to affected part and covered with leaf of *acoyo blanco* (Nos. 72 or 134) or castor.
*d.* MG, ML.
*e.* Same as No. 232.

165. Unknown to informant.
*a.* kałwantelakajú.
*b. Polygala* sp. Wild vine.
*c.* Ornamental flowers.
*d.* AM.
*e.* Figures in folktale.

166. *Gallina ciega.*
*a.* Not recorded.
*b. Teucrium cubense* Jacq. subsp. *chamaedrifolium* (Mill.) Epl. Volunteer near houses or along trails.
*c.* Used to bathe pustules: entire plant, including root, boiled; hot liquid applied.
*d.* Mercedes Morales.
*e.* See No. 348, same species collected by another informant. Apparently through error, specimen of *Pisonia aculeata* L. likewise submitted under No. 166; see No. 204.

167. *Zapote reventador.*
*a.* lítsɔkni'; lí·sɔkni' (*cosa para pintar o para escribir*).
*b. Pachira aquatica* Aubl. Wild tree; grows along arroyos.
*c.* No utility.
*d.* MG, Pedro Pérez.

168. *Suelda consuelda.*
*a.* lukut'tatastuk.
*b.* Specimen missing; collected in Papantla. *Monte* plant; grows along trails.
*c.* Used as purge to relieve aftereffects of heavy drinking. Poisonous if taken in excess.
*d.* MG.

169. *Misanteca.*
*a.* skoyutkiwi'.
*b. Licaria capitata* (Schlecht. & Cham.) Kosterm. *Monte alto* tree.
*c.* Leaf used as thatch.
*d.* MG.

170. See No. 59.

171. *Palo de rosa.*
*a.* ištúšti kačon'.
*b. Tabebuia pentaphylla* (L.) Hemsl. *Monte alto* tree.
*c.* Wood used for house beams and roof *cintas* (fig. 23, *d, i*).
*d.* MG.

172. *Papayito cimarrón.*
*a.* tutún čiči' (čiči', *perro*).
*b. Carica papaya* L. Volunteer in abandoned maize fields. Some informants distinguish male (*macho*) (LX), and female (*hembra*) (MG).
*c.* Fruit stewed (LX); denied by some informants.
*d.* Lorenzo Xochigua, MG.

173. *Cojón de gato; manzanito cimarrón.*
*a.* šanat'kiwi (šanat', *flor;* kiwi, *palo*).
*b. Eugenia trunciflora* (Schlecht. & Cham.) Berg. Wild.
*c.* Favored support for vanilla.
*d.* MG.
*e.* Not to be confused with other plants of same Spanish name (Nos. 26, 138).

174. *Palo verde.*
*a.* Unknown to informant.
*b. Iresine interrupta* Benth.
*c.* No utility.
*d.* MG.
*e.* Not well known to informant.

175. *Cruceta.*
*a.* kulu·s túkun; kulu·s?túkun; kulu·s?túkutun šaláqlan·qa (kulu·s?, *cruz;* túkun, *espina;* šaláqlan·qa, *grande*).
*b. Randia watsoni* Robins. *Monte alto* shrub or small tree; also volunteer in abandoned maize fields. Scarce.
*c.* Remedy for hydrophobia and snake bite: (a) root boiled, liquid mixed with alcohol and drunk; (b) fruit [boiled?] strained and drunk with alcohol; (c) root well boiled and liquid taken with gunpowder (*sic*).
*d.* MG.
*e.* Not to be confused with No. 329, same Spanish name.

176. *Chijol.*
*a.* ska·k'an kiwi; skakán kiwi.
*b. Piscidia communis* (Blake) Harms. Tall tree in *monte alto.*
*c.* Wood preferred for house posts.
*d.* MG.
*e.* An old reference (Gazeta de México, p. 283) remarks that a post of *chijol,* set in the ground, turns to flint (*pedernal*) in the course of several years.

177. Unknown.
*a.* Unknown.
*b. Pereskia grandifolia* Haw. Specimen gathered in Plan de Palmar.
*c.* Unknown.
*d.* Unknown to MG.

178. Unknown to informant.
*a.* Unknown to informant.
*b. Centrosema plumieri* Benth. Volunteer in abandoned maize fields and along trails.
*c.* No utility.
*d.* MG.

179. *Palo de lumbre.*
*a.* łkuiátkiwi; łkuyát kiwi.
*b. Malpighia glabra* L.
*c.* Febrifuge: raw leaf macerated in water and liquid drunk.
*d.* MG.

180. *Tarro.*
*a.* mʌtlu?uk.
*b. Guadua aculeata* Rupr. Determined by J. R. Swallen; verified by F. A. McClure; also called *Bambusa aculeata. Monte alto* plant, found especially along arroyos.
*c.* Stalk used for fences, house walls, and certain furnishings (frames, shelves, platforms, table, and bed frames).
*d.* MG.

181. *Chalahuite silvestre.*
*a.* ka·ʌm; kalʌm?.
*b. Inga leptoloba* Schlecht. Wild.
*c.* Edible fruit (p. 163).
*d.* MG.
*e.* See No. 195, regarded by informant as cultivated form.

182. *Verbena; alfombrilla cimarrona.*
*a.* Unknown to informants.
*b. Verbena ehrenbergiana* Schauer. Wild.
*c.* No utility (JC). Remedy for stomach ache: leaf boiled, salted, and liquid drunk (EX).
*d.* Juan Castro, Elena A. de Xochigua.
*e.* Plant unknown to MG. Same as No. 310.

183. See No. 157.

184. *Acoyo colorado.*
*a.* ɕuɸokɔk jínan (jínan, *rojo*).
*b. Piper* sp. Wild along arroyos or in humid ground.
*c.* Leaf as condiment (pp. 154, 157, 184). Used in bath; leaves boiled and rubbed on body. Four or eight days after childbirth, women bathe in sweat bath, using liquid in which entire plant has been boiled, and rubbing body with handful of leaves.
*d.* MG.

185. Specimen missing.

186. *Jobo.*
*a.* šipa?.
*b. Spondias mombin* L. Large *monte alto* tree; not cultivated.
*c.* Edible fruit.
*d.* MG.

187. *Bejuco de parra.*
*a.* s'núkuti; snúnkut; s'núnkut?.
*b. Vitis tiliaefolia* H. & B. *Monte alto* vine.
*c.* Fruit occasionally eaten. Thick stem contains fluid which, in emergency, may be drunk to quench thirst.
*d.* MG.

188. Unknown to informant.
*a.* akasúkut; akasúkuɕ.
*b. Podachaenium eminens* (Lag.) Sch.–Bip. Determined by S. F. Blake.
*c.* Poles serve as uprights of house wall; also as roof *cintas* (fig. 23, *d, i*). Leaf used to wrap chili or squash (*pipián*) seed during artificial germination.
*d.* MG.

189. *Pata de vaca, negra.*
*a.* špipilá kiwi?; spipilákiwi šaɕiɕéket?.
*b.* Two specimens: one, *Bauhinia dipetala* Hemsl.; the other, *Bauhinia* sp. Wild along arroyos.
*c.* Remedy for diarrhea, adults and children: raw leaf macerated in water and liquid drunk, sometimes strained previously.
*d.* MG.
*e.* Same as No. 293.

190. *Pipín.*
*a.* cilíksni?.
*b. Celtis monoica* Hemsl. *Monte alto* tree.
*c.* No utility.
*d.* MG.

191. *Zapote chico.*

*a.* liksujáqatʔ; skulújaq; ja·ka.

*b.* *Achras zapota* L. *Monte alto* tree (MG); also volunteer in second growth *monte* (LX, JB).

*c.* Wood used for house frame, digging stick (MG). Remedy, ambiguously phrased, for pustules on feet: skunk meat and broth of *zapote* (presumably, *zapote chico*) recommended. Bark boiled and liquid apparently applied, together with sap from *sangregado* (No. 239) (MG). Fruit edible; sometimes sold in Papantla (LX, JB). Chicle occasionally sold to Papantla merchants (MG).

*d.* MG, Lorenzo Xochigua, José Bautista (junior), ML.

*e.* See Nos. 221, 349. Mentioned as tasty wild fruit among one group of Totonac (Relación de Hueytlalpan).

192. *Piñón.*

*a.* sku·luʔu.

*b.* *Jatropha curcas* L. Shrub, cultivated in house clearings.

*c.* Edible: seed dried, shelled, toasted, and ground; added to various dishes.

*d.* MG, Rosalino González.

*e.* Laxative qualities not recognized by Totonac; milky sap said to stain clothing.

193. *Frijolillo.*

*a.* stapún kiwiʔ (stapú, *frijol:* kiwiʔ, *palo*).

*b.* *Pithecellobium arboreum* (L.) Urb. *Monte alto* tree; "grows anywhere."

*c.* Wood used for roof poles (*alfarda*, fig. 23, *d*, *i*), door frames and "sills." Also for wooden trays, but cedar (No. 219) preferred.

*d.* MG.

194. *Caoba.*

*a.* makšʌšuk kiwi.

*b.* *Swietenia macrophylla* King. *Monte alto* tree.

*c.* Wood used for beams, for roof poles (*alfarda*, fig. 23, *d*, *i*), and wooden trays; in all cases, *cedro* (No. 219) preferable.

*d.* MG.

195. *Chalahuite.*

*a.* taláška.

*b.* *Inga paterno* Harms. Tree grown from seed in house clearings and maize fields.

*c.* Edible fruit.

*d.* MG.

*e.* See No. 181, considered wild form.

196. See No. 38.

196a. *Lelekes* (*sic*).

*a.* li·lʌk.

*b.* *Leucaena glauca* (L.) Benth. Cultivated, from seed, in milpas and house clearings; sometimes a volunteer. Leaf said to be larger than that of wild form (No. 38).

*c.* Fruit eaten, especially by children.

*d.* MG.

*e.* This specimen labeled 196*a* to distinguish it from 196, wild form; latter treated under No. 38.

197. *Amor.*

*a.* No Totonac name.

*b.* *Momordica charantia* L. Determined by L. H. Bailey. Cultivated vine; not found in *monte.*

*c.* Seed sometimes eaten; plant "of little importance."

*d.* MG.

198. *Zapote de calentura.*

*a.* tu·paʔ; tuʔpaʔ.

*b.* Not determinable. *Monte alto* tree.

*c.* Fruit edible; wood of no utility; does not produce chicle.

*d.* MG.

199. Unknown to informant.

*a.* laqašmáiyak.

*b.* *Serjania* sp. Wild vine.

*c.* Fish poison (p. 80); not injurious to humans.

*d.* MG.

200. *Capitas.*

*a.* pustapu máyak (pustapu [pulákstapu], *capitas* (p. 154); máyak, *bejuco*).

*b.* *Drepanocarpus lunatus* (L. f.) Meyer. *Monte alto* vine.

*c.* "The strongest of all lianas"; used to haul pole for Volador dance; also laced about it so that dancers can ascend. No further utility; not employed as house lashing.

*d.* MG.

201. *Bejuco de San Diego.*

*a.* spislɔ́kɔt jukiʔ (*pescuezo de venado*); išpišlókot júke; šakalókot júki; išpišni júke.

*b.* *Petrea volubilis* L. *Monte alto* vine; sometimes transplanted to gardens (MG).

*c.* Decorative flower. Stem formerly used as mouthpiece for pipe; no further utility.

*d.* MG, Lorenzo Xochigua, Manuel de la Luz.

202. Unknown to informant.

*a.* ču·čɔks.

*b.* Four specimens collected by same informant: two, *Gouania polygama* (Jacq.) Urb.; one, *Smilax aristolochiaefolia* Mill. (see No. 252); and one, *Tournefortia hirsutissima* L. *Monte alto* vine.

*c.* Stem cut and added to *pulque de caña* in course of fermentation (p. 165).

*d.* MG.

203. *Palo de humo; chamacuero.*

*a.* kašitúkun; kasiłstúkun.

*b.* Two specimens. one, probably *Pithecellobium insigne* M. Micheli; the other, probably *Pithecellobium* sp. Wild tree; "grows anwyhere."

*c.* Children sometimes eat flesh within pod; no further utility.

*d.* MG.

*e.* Same as No. 294.

204. *Uña de gavilán.*

*a.* i¢iján wayaʔ; istiján waiya (waiya, *gavilán*).

*b.* *Pisonia aculeata* L. Grows in *monte alto.*

*c.* No utility.

*d.* MG.

*e.* Fruit said to be viscid; if bird alights on fallen fruit, is unable to escape. See also No. 166.

205. *Copalillo.*
*a.* sipípum.
*b. Exothea copalillo* (Schlecht.) Radlk. *Monte alto* tree.
*c.* Wood used for house frame; sprays as body whip in sweat bath.
*d.* MG.
*e.* Not to be confused with No. 47, same Spanish name.

206. *Alzaprima.*
*a.* awawá kiwi.
*b. Carpodiptera ameliae* Lundell. *Monte alto* tree.
*c.* Wood used for house posts and beams.
*d.* MG, Rosalino González, Mercedes Morales.

207. Unknown to informant.
*a.* stapukónʌt (stapu, *frijol*); stapuqónʌt; li·nʌke (*para azotarse*).
*b.* Probably *Paullinia clavigera* Schlecht. *Monte alto* vine; also volunteer in abandoned maize fields.
*c.* Fruit sometimes eaten. Spray used as body whip in sweat bath.
*d.* MG.
*e.* Apparently supposed by informant to be same as No. 246; however he says "there is another of same name but it is no good."

208. *Guayabillo.*
*a.* misinín kiwi?; mi·ɕinín kiwi?.
*b. Calyptranthes schiedeana Berg.* Grows in *monte alto.*
*c.* Fruit edible. Pole serves as digging stick; saplings as roof poles of thatched house.
*d.* MG.

209. *Ombligo de criatura.*
*a.* ištampúsni? ska?ta (ištanpúsni?, *ombligo;* ska?ta, *criatura*).
*b. Operculina ornithopoda* (Robins.) House. Vine; volunteer in abandoned maize fields.
*c.* No utility.
*d.* MG.

210. Unknown to informant.
*a.* Unknown to informant.
*b. Vernonia aschenborniana* Schauer.
*c.* Presumably of no utility.
*d.* MG not acquainted with plant.

211. *Hoja fresca.*
*a.* skawíwi tuwan; sqawitu·wan (*hoja fresca*).
*b. Kalanchoë pinnata* (Lam.) Pers. Wild plant [presumably naturalized].
*c.* Headache remedy: green leaf placed over each temple.
*d.* MG, Dolores Méndez.
*e.* Same as No. 235.

212. Unknown to informant.
*a.* Unknown to informant.
*b. Eupatorium albicaule* Sch.-Bip.
*c.* Presumably no utility.
*d.* MG not acquainted with plant.
*e.* See No. 314.

213. Unknown to informant.
*a.* Unknown to informant.
*b. Bunchosia biocellata* Schlecht.
*c.* Presumably no utility.
*d.* MG not acquainted with plant.

214. *Chile verde; chiltepín.*
*a.* staká?pin.
*b. Capsicum frutescens* L.; seed identified by Charles Heiser, Jr., as *C. annuum.* Volunteer in milpa; seed sometimes tossed in field to increase yield (AM, RG).
*c.* Standard seasoning; salable (MG) in Papantla (AM, RG). Remedy for magical *malviento* and *malojo* in children (ML).
*d.* AM, Rosalino González, MG, ML.

215. Unknown to informant.
*a.* Unknown to informant.
*b. Smilax mollis* H. B. K.
*c.* Presumably no utility.
*d.* MG not acquainted with plant.

216. *Semilla de culebra.*
*a.* Not recorded.
*b. Abrus precatorius* L.
*c.* Presumably no utility.
*d.* Catalina Calderón.
*e.* Plant unknown to MG. Not to be confused with No. 33, same Spanish name.

217. See No. 162.

218. Unknown to informants.
*a.* akás?ti; akášti?.
*b. Guazuma ulmifolia* Lam. *Monte alto* tree.
*c.* Fruit sometimes eaten by humans (MG), also by animals. Wood serves as fuel (RG).
*d.* MG. Rosalino González.

219. *Cedro; cedro real.*
*a.* puksnún kiwi?.
*b. Cedrela mexicana* M. Roem. *Monte alto* tree.
*c.* Preferred wood for house construction (posts, beams) and for furniture (MG). Remedy for bilious disorders caused by anger: tea made of leaves combined with rosemary (*romero*). Abortifacient: tea made of boiled bark (ML). Sprays used in bath of seven herbs (No. 15).
*d.* MG, ML.

220. *Zapote mante.*
*a.* kukunú?.
*b. Pouteria campechiana* (H. B. K.) Baehni. *Monte alto* tree (MG); also cultivated (LX).
*c.* Fruit edible (MG); seldom sold (LX).
*d.* MG, Lorenzo Xochigua.

221. *Higo.*
*a.* suja; sujɔk?; sú?ja.
*b. Ficus tecolutlensis* (Liebm.) Miq. *Monte alto* tree.
*c.* No utility except for shade (MG). Fruit edible but seldom eaten (ML). Milky juice of *higuero* (*sic*) (sú?ja) combined with that of *zapote chico* (No. 191), and *ábalo* (No. 349); and sold as chicle (NM).
*d.* MG, ML, Nemesio Martínez.

222. *Higuera.*
*a.* čak'łti; čaksti.
*b. Ficus glaucescens* (Liebm.) Miq. *Monte alto* tree.
*c.* No utility (MG). Sap used as adhesive to stick paper (MM).
*d.* MG, Mercedes Morales.
*e.* Same as No. 280. Sap of similar tree, but with narrower leaf, used to kill fly larvae about wound after hog is castrated.

223. See No. 84.

224. *Pita.*
*a.* aks?kai?.
*b.* Probably *Aechmea magdalenae* (André) André ex Bak. Determined by Lyman B. Smith.
*c.* Fiber used for casting nets.
*d.* Pedro Pérez.

225. See No. 145.

226. See No. 103.

227. *Perritos.*
*a.* maɬók; mʌɬɔk.
*b.* Probably *Maranta arundinacea* L. Cultivated on fringes of maize field. Said not to flower.
*c.* Underground stem edible (p. 156).
*d.* AM, MG.

228. *Chaca.*
*a.* tasun?; ta·sun?
*b.* Two specimens collected; one not determined; the other, *Bursera simaruba* (L.) Sarg. *Monte alta* tree.
*c.* Cuttings planted as living fence. Wood inferior as fuel: "He who burns *chaca* becomes poorer than ever." Sap used as adhesive to stick paper (MM). Bark boiled with salt; liquid taken as purge and to reduce fever (FVM, LP). Headache remedy: leaf placed on each temple (MG); or any green leaf stuck to temples with sap freshly extracted from trunk of *chaca* (RG).
*d.* Mercedes Morales, Francisco Villanueva Mata, Luis Patiño, MG, Rosalino González.

229. *Ala de murciélago.*
*a.* Not recorded.
*b.* Genus and species not determined; family possibly Cucurbitaceae.
*c.* Remedies for gonorrhea: leaves cooled in night air and placed in water; liquid drunk. Entire fruit mashed in water and liquid drunk.
*d.* MG.

230. *Flor de pito; flor de izote.*
*a.* akalúkut?.
*b. Yucca aloifolia* L. Found in *monte alto* (*sic*) and house clearings; apparently not cultivated (?).
*c.* Flower edible (p. 162).
*d.* MG.

231. Unknown to informant.
*a.* išak'pásas·páka?.
*b.* Genus and species not determined; Curcurbitaceae family. *Monte* vine.
*c.* Used as bath and to wash pustules, foams like soap (MG). Formerly used to wash clothes (FG).
*d.* MG, Felipa García.

232. See No. 164.

233. *Frijol criollo; frijol de Castilla.*
*a.* ka·nástapu; kanástapu.
*b. Phaseolus* sp. Seed identified by Hugh Cutler as *P. vulgaris* L. Cultivated.
*c.* Edible; salable in Tajín and in Papantla; "more expensive than other beans."
*d.* Paulino Xochigua.
*e.* See p. 134 for details.

234. Unknown to informant.
*a.* taškat (*miel*).
*b. Perymenium gymnolomoides* (Less.) DC. Wild vine.
*c.* Flowers popular with native and introduced bees.
*d.* AM.

235. See No. 211.

236. *Bejuco del sol.*
*a.* jaka·šanat'.
*b. Senecio confusus* Britten. Vine.
*c.* No utility.
*d.* AM, MG.

237. Unknown to informant.
*a.* škałpuputla·pánit (*espuma de tigre*)
*b. Odontonema callistachyum* (Schlecht. & Cham.) Kuntze. Wild.
*c.* No utility.
*d.* MG.

238. *Frijol majayán.*
*a.* lukústapu.
*b. Phaseolus* sp. Seed identified by Hugh Cutler as *P. vulgaris* L. Cultivated; allegedly introduced from highlands; date unknown (TG); some Totonac regard it as native.
*c.* Edible.
*d.* Tirso González, AM, Natividad Méndez.
*e.* See p. 135 for details.

239. *Sangregado.*
*a.* pʌksnún kiwi?.
*b. Croton draco* Schlecht.
*c.* Wounds washed first with water in which leaf of guava or of *cacahuapaxtle* (No. 87) has been boiled, then milky sap of *sangregado* applied. Remedy for itch: sap applied to affected area. Remedy for pustules on feet (see No. 191) (MG). Sap serves as red stain for wood, not as textile dye (PP).
*d.* MG, Pedro Pérez.

240. *Yuca blanca.*
*a.* koškéwi.
*b. Manihot esculenta.* Determined by H. C. Cutler. Grown from cuttings in maize fields and patios. Informant distinguishes two types: one narrow-leafed with white root (*yuca blanca*); another wide-leafed with yellow root (*amarilla*); the former more tasty.
*c.* Year-old roots of both types eaten (p. 156).
*d.* MG.

241. *Tabaquillo.*
*a.* aškutkiwi.
*b. Lippia myriocephala* Schlecht. & Cham. Volunteer shrub in abandoned maize fields.

*c.* Wood used for beams and roof frame of native house.
*d.* MG.

242. Unknown to informant.
*a.* łtanke.
*b.* Possibly *Bomarea edulis* (Tuss.) Herb. Wild vine in maize fields.
*c.* Raw root eaten to stimulate lactation.
*d.* MG.

243. *Zacate paral* (*sic*).
*a.* No Totonac name.
*b. Panicum purpurascens* Raddi. "Grows anywhere." Runners transplanted; not propagated successfully from seed. Not considered native, but date of introduction unknown.
*c.* Fodder.
*d.* MG.

244. *Ala de murciélago.*
*a.* pača·watûwan (pača·w, *bazo*); pačawatûan.
*b. Passiflora coriacea* Juss. Vine; wild in milpa and abandoned maize fields.
*c.* Remedy for disorders of spleen (*bazo*): leaves seared on coals; smooth side rubbed with tallow and placed over spleen.
*d.* MG.
*e.* Same as No. 334. By another informant, same species given different Spanish name and distinct use; see No. 366.

245. *Zacate guinea.*
*a.* No Totonac name.
*b. Panicum maximum* Jacq. "Grows anywhere." Sometimes cultivated from seed; "it takes a long time to grow."
*c.* Fodder and thatch.
*d.* MG.

246. Unknown to informant.
*a.* stapukûnut.
*b.* Probably *Serjania* sp. Wild vine in milpas.
*c.* Edible fruit (?).
*d.* MG.
*e.* Informant gives virtually same native name for No. 207, and apparently has confused the two specimens. It seems more likely that the edible fruit is produced by No. 207.

247. *Tomatillo.*
*a.* ča·mpûlulu.
*b. Physalis* sp. Wild in maize fields; scarce.
*c.* No utility (MG). Imported, for sale in Papantla market, but unpopular there; not used in Tajín. Small wild tomato (No. 24) preferred (MM).
*d.* MG, Mercedes Morales.
*e.* In many parts of Mexico *Physalis* and true tomato of equal importance.

248. *Aguacate oloroso.*
*a.* kuka·ta.
*b. Persea americana* Mill. var. *drymifolia* (Schlecht. & Cham.) Blake. Cultivated from seed.
*c.* Fruit edible; leaf a condiment (pp. 157, 160). Remedy for magical *malviento* in children: leaves burned on sherd beneath child's cradle so that smoke may envelop him (MG). Remedy for fright caused by magical contact with dead: leaves burned to produce curative smoke (ML). Remedy for "fright": handful of earth is heated; to it are added water, alcohol, holy water, shredded tobacco, one or two cloves of garlic, and several leaves of *aguacate oloroso.* With this mixture, sign of the cross drawn on forehead, wrists, and inner elbow joints; applied in evening; patient bathes on following day (FVM). Sprays used in bath of seven herbs (No. 15). Remedy for cough and common cold: tea made by boiling leaves (MG).
*d.* MG, ML, Francisco Villanueva Mata.

249. *Higuerilla roja.*
*a.* kaštilenke.
*b. Ricinus communis* L. Not cultivated.
*c.* Seed a source of oil used in cooking (p. 161).
*d.* MG.
*e.* Same species as No. 250, but considered distinct by informants.

250. *Higuerilla blanca.*
*a.* kaštilenke šasakaqa (šasakaqa, *blanca*).
*b. Ricinus communis* L. Not cultivated.
*c.* Febrifuge: leaf seared on coals and placed, together with raw egg or wild tomato (No. 24), as compress on belly, soles of feet, sometimes also on lumbar area. Or fresh leaf dipped in raw egg and applied to belly and soles of feet. Remedy for swelling: leaves seared on coals and applied to affected part. Seed not utilized (cf. No. 249).
*d.* MG.

251. Unknown to informant.
*a.* mašus.
*b. Mucuna argyrophylla* Standl. Wild vine.
*c.* Remedy for eye irritation: liquid from stem applied to eyes.
*d.* MG.

252. *Zarza.*
*a.* sarsa (*sic*).
*b. Similax aristolochiaefolia* Mill. Wild vine; "grows anywhere".
*c.* Stem used as coil filler for cradles. Roots used to make fermented beverage (p. 164). Latter left outdoors overnight and taken in quantity as remedy for gonorrhea (RO).
*d.* Lorenzo Xochigua. Rutilio Olmos, MG.
*e.* Same as one specimen of No. 202.

253. See No. 148.

254. *Chicharo.*
*a.* kalabanšas (*sic*).
*b. Pisum sativum* L. Cultivated in maize fields.
*c.* Not important in diet.
*d.* MG.

255. *Calaguala.*
*a.* li·kuču?.
*b. Phlebodium aureum* (L.) Smith. Epiphytic fern growing on *palma redonda* (No. 259).
*c.* Remedy for abcesses: lower stem boiled and liquid drunk.
*d.* MG.

256. *Cola de gallo; pluma de loro; cola de loro.*
*a.* iɕtaján; iɕpakán.
*b. Codiaeum variegatum* Blume. Ornamental plant cultivated in gardens.
*c.* Altar decoration.
*d.* MG.
*e.* Same determination as Nos. 257 and 258, but informants recognize three kinds, distinguished by Spanish names (see above).

257. See No. 256.

258. See No. 256.

259. *Palma redonda.*
*a.* stiliki? ɕu·kswat.
*b. Sabal mexicana* Mart.; determined by L. H. Bailey. Wild palm (MG), spared when fields are cleared.
*c.* Leaf for cordage, thatch, chair seats, and ornamental palm figures used in altar decoration.
*d.* MG.

260. *Camote.*
*a.* manta [generic term for sweetpotato]; saqáka ma·nta (*camote blanco*), ɕuɕóqo? ma·nta (*camote morado*); smukúku ma·nta (*camote amarillo*).
*b. Ipomaea batatas* (L.) Lam. Cultivated.
*c.* Root relatively important in diet; leaf not eaten.
*d.* MG.
*e.* Informant distinguishes sweetpotatoes by color. Of four specimens collected, two have white skin and flesh; one has red or purple skin and one unidentified as to color.

261. *Flor de muerto.*
*a.* jakaɕanat.
*b. Tagetes patula* L. Cultivated (?) in house clearings and maize fields.
*c.* Altar decoration (MG). Substitute for *flor de mayo* in magical "cleansing" ceremony (No. 151) (ML).
*d.* MG, ML.

262. *Almendra.*
*a.* No Totonac name.
*b. Terminalia catappa* L. Found in one garden only; introduced from Jalapa some years ago.
*c.* "Almonds" declared edible, but not eaten locally.
*d.* MG.

263. *Tortilla de ratón; pegarropa; pegapega.*
a. iščauɕia; čausiyá.
*b.* Two speciments: one, *Desmodium axillare* (Sw.) DC. var. *genuina;* the other, *Desmodium canum* (Gmel.) Schinz & Thell. Determination by Bernice G. Schubert. Weed in maize fields (BX).
*c.* No utility (MG). Remedy for diarrhea and nausea (LP).
*d.* MG, Bernabé Xochigua, Luis Patiño.

264. Unknown to informant.
*a.* páks?tamak.
*b. Anoda cristata* (L.) Schlecht.
*c.* Remedy for magical *malviento* in small children: sprays boiled and liquid used in bath.
*d.* MG.

265. Unknown to informant.
*a.* ɕiɕaketkúčušu.
*b. Eupatorium odoratum* L. Wild vine in abandoned milpas.
*c.* Used [as substitute?] in bath of seven herbs (No. 15).
*d.* MG.

266. *Palo de voladillo.*
*a.* snʌtpu?u.
*b. Sapindus saponaria* L. *Monte alto* tree.
*c.* Fruit of no utility. Wood used for ax handle.
*d.* MG.

267. *Paxtle; pañal de niño.*
*a.* Unknown to informant.
*b. Tillandsia usneoides* L.
*c.* Used on Christmas Eve to make bed for Christ Child; practice confined to one family.
*d.* MG.

268. Unknown to informant.
*a.* kukújala?.
*b. Myriocarpa cordifolia* Liebm. Wild shrub found in humid ground and along arroyos.
*c.* Leaves used to wrap purchases of meat.
*d.* MG.

269. See No. 156.

270. *Vara de San José.*
*a.* išlištõkɔ.
*b.* Probably *Jacobinia umbrosa* (Benth.) Blake. Cultivated in gardens.
*c.* Altar decoration.
*d.* MG.

271. *Carrizo del sol.*
*a.* iškatit čičiní? (čičini?, *sol*).
*b. Russelia campechiana* Standl. *Monte* vine.
*c.* Altar decoration (AM). Formerly used as stem for pipe (MG).
*d.* MG, AM.

272. Canceled.

273. *Calabaza.*
*a.* nípši?, nipiši?.
*b. Cucurbita moschata* Duch. Determined by L. H. Bailey. Hugh Cutler identifies seeds as *C. moschata* Poiret (p. 136). Cultivated.
*c.* Fruit eaten (p. 136).
*d.* MG.
*e.* See also No. 278.

274. *Pedo de culebra.*
*a.* Not recorded.
*b. Asclepias curassavica* L. Wild vine.
*c.* Remedy for hemorrhoids: young leaves seared on coals, smeared with castor oil, and eaten (EX). Milky sap poisonous (BS).
*d.* Elena A. de Xochigua, MG, Rutilio Olmos, Bartolo Simbrón.
*e.* Another plant, same Spanish name (no specimen) used as whooping cough remedy (MG); root (presumably of other plant) split and necklace made of pieces, likewise as cure for whooping cough (RO).

275. *Zacate colorado.*

*a.* ličikíni sákat; ɕuɕokɔt sákat. (sákat, *zacate?*).

*b. Imperata contracta* (H. B. K.) Hitchc. Determined by J. R. Swallen. Grown from transplanted runners, in maize field (LX).

*c.* Used as thatch, but "too dry" for fodder (LX).

*d.* Lorenzo Xochigua, MG, José María García.

*e.* A wild form, *zacate colorado cimarrón*, of no utility (MG); used as thatch (JMG).

276. *Cilantro extranjero.*

*a.* No Totonac name.

*b. Eryngium foetidum* L. Cultivated from seed, or small volunteers transplanted; available throughout year.

*c.* Used as seasoning.

*d.* MG.

*e.* Despite name, informant considers plant native.

277. *Tabaco criollo.*

*a.* aškut.

*b. Nicotiana* sp., probably *N. tabacum* L. Not raised locally.

*c.* A curiosity in one Tajín garden.

*d.* MG.

278. *Calabaza de bola.*

*a.* nip?ši šamaktankolɔlɔ.

*b. Cucurbita moschata* Duch. Determined by L. H. Bailey. Cultivated.

*c.* Fruit eaten (p. 136).

*d.* MG.

*e.* See also No. 273, same species.

279. See No. 71.

280. See No. 222.

281. *Bella.*

*a.* Presumably no Totonac name.

*b. Zinnia elegans* Jacq. Said to be introduced; apparently escaped from cultivation.

*c.* "Only a flower"; no utility.

*d.* Pedro Pérez.

282. *Mango.*

*a.* mango (*sic*).

*b. Mangifera indica* L. Fruit tree cultivated in house clearings, maize fields; only one kind occurs locally.

*c.* Edible fruit; not produced in salable quantity.

*d.* MG.

283. *Guapilla.*

*a.* mu·ta.

*b. Bromelia karatas* L. (?). Determined by Lyman B. Smith.

*c.* Ripe fruit edible; also used as base for fermented drink (p. 164).

*d.* MG.

284. *Pichoco.*

*a.* λaɪni; λaλni.

*b. Erythrina americana* Mill. *Monte* tree (AM); but also grown from cuttings in house clearing (MG).

*c.* Blossom edible (p. 162).

*d.* AM, MG.

285. Unknown to informant.

*a.* ku·laš (Spanish *col?*).

*b. Brassica oleracea* L. var. *tronchuda* Bailey. Occasionally cultivated in maize fields.

*c.* Edible (p. 162) but regarded without enthusiasm.

*d.* MG.

286. Unknown to informants.

*a.* súyu?

*b. Ipomaea purga* (Wenderoth) Hayne. Vine; volunteer in abandoned maize fields, along arroyos, or in humid ground.

*c.* In Talaxca, leaves eaten with beans (ML) (pp. 161–162); apparently not used in Tajín (MG).

*d.* ML, MG.

*e.* This the famous Jalapa purge; laxative qualities not recognized in Tajín.

287. *Palo de lodo.*

*a.* pu·tunún kiwi.

*b. Eupatorium daleoides* (DC.) Hemsl.

*c.* Flower used as altar decoration; poles, as house walls and roof frame.

*d.* MG.

288. *Zacate de venado.*

*a.* išsakát?juki? (juki?, *venado*).

*b. Imperata brasiliensis* Trin. Determined by J. R. Swallen. Troublesome weed in maize fields.

*c.* No utility.

*d.* MG.

*e.* "Looks like *zacate colorado* (No. 275) but is not."

289. *Noche buena.*

*a.* pastúšʌn.

*b. Euphorbia pulcherrima* Willd. Cultivated; no wild form.

*c.* Used as altar decoration on Christmas Eve.

*d.* MG.

290. *Ciruelo rojo.*

*a.* ɕuɕɔqɔ stata; šáɕuɕɔkɔ skatan (šáɕuɕɔkɔ, *rojo;* skatan, *ciruelo*).

*b. Spondias purpurea* L. Grown from cuttings in house clearings.

*c.* Raw fruit edible.

*d.* MG.

*e.* See also Nos. 291 and 292, same species.

291. *Ciruelo campechano.*

*a.* campečano (*sic*).

*b. Spondias purpurea* L. Grown from cuttings in house clearing or milpa.

*c.* Fruit edible.

*d.* MG.

*e.* Fruit yellow, but smaller than succeeding (No. 292). Because of name, informant supposes this to be native of Campeche. See also Nos. 290 and 292.

292. *Ciruelo amarillo.*

*a.* smukuko skatan (smukuko, *amarillo; skatan, ciruelo*).

*b. Spondias purpurea* L. Grown from cuttings in house clearing; "if planted in milpas, birds eat the fruit."

*c.* Raw fruit edible (MG). Remedy for heat rash "caused by bathing in afternoon during hot weather": young, green leaves rubbed on affected area (MM, EX); leaves added to bath water (EX). Remedy for boils and hives: four special baths (see No. 72) (ML).

*d.* MG, Mercedes Morales, Elena A. de Xochigua, ML.

*e.* Remedy for heat rash may apply also to other *ciruelos;* informants not specific. Remedy for pustules and hives presumably refers to *ciruelo amarillo,* although it may as well apply to *rojo.* See also Nos. 290 and 291.

**293.** See No. 189.

**294.** See No. 203.

**295.** *Lágrimas de San Pedro.*

*a.* išlakaštajat *San Pedro.*

*b. Coix lacryma-jobi* L. Wild along arroyos; cultivated in house clearings; successfully (MG); unsuccessfully, for lack of moisture (EX).

*c.* Seeds used for rosary beads [probably not locally], and necklaces made by children (MG).

*d.* MG, Elena A. de Xochigua.

**296.** See No. 88.

**297.** *Frijol de cuerno.*

*a.* See p. 135 for discussion of names.

*b.* Dubiously, *Vigna sinensis* (L.) Savi. Seed specimen identified by Hugh Cutler as *Vigna unguiculata* (L.) Walp. (p. 135). Cultivated.

*c.* Edible.

*d.* Lorenzo Xochigua.

**298.** *Frijol amarillo; lenteja (sic).*

*a.* paluwa siq? (*tripa de ratón*).

*b. Phaseolus calcaratus* Roxb. Seed similarly identified by Hugh Cutler. Cultivated; introduced ca. 15 years ago from highlands.

*c.* Edible.

*d.* Lorenzo Xochigua, MG.

**299.** *Cabeza de negro.*

*a.* šaqšákat λeλákat; šašáqa tiλáke (šašáqa, *negro;* tiλáke, *cabeza*).

*b. Dioscorea alata* L. "Grows anywhere." Tuberous root or aerial tubers planted.

*c.* Aerial tubers eaten (pp. 138, 156).

*d.* Lorenzo Xochigua.

**300.** *Zacual cultivado.*

*a.* poke?.

*b. Crescentia cujete* L.

*c.* Shell of fruit used as receptacle.

*d.* MG, Pedro García.

*e.* Informants distinguish between plants producing globular and elongated fruit; but Spanish and Totonac names identical, and both determined as same species. Same as No. 303.

**301.** *Tobe; tubos.* Not generally known to informants.

*a.* aks?ke.

*b. Aechmea mexicana* Bak. Determined by Lyman B. Smith.

*c.* Spiny leaf used to channel chicle from *zapote chico* (No. 191) into vessel (LX). Plant contains liquid which may be drunk to quench thirst. Root formerly used for brooms (MG).

*d.* Lorenzo Xochigua, MG.

*e.* This said to be "female;" No. 302 considered male.

**302.** *Tobe; tubos.*

*a.* aks?ke.

*b. Aechmea bracteata* (Sw.) Griseb. Determined by Lyman B. Smith.

*c.* See No. 301.

*d.* Lorenzo Xochigua, MG.

*e.* Considered "male" form.

**303.** See No. 300.

**304.** See No. 71.

**305.** *Bejuco sarnoso.*

*a.* s·kau.

*b. Marsdenia macrophylla* (H. & B.) Fourn. *Monte alto* vine.

*c.* Milky sap used as adhesive for paper, altar decorations; and for paper stars, and lanterns at Christmas.

*d.* MG.

*e.* See ftn. 14, p. 84.

**306.** *Malanga.*

*a.* lo·k?.

*b.* Probably *Xanthosoma* sp.

*c.* No utility.

*d.* MG.

**307.** *Manzanilla.*

*a.* No Totonac name.

*b. Helenium quadridentatum* Labill. Wild.

*c.* Sprays used as broom for sweeping flea-ridden spots; flowers' strong odor kills or drives away fleas.

*d.* MG, Juan Castro, Luis Patiño.

**308.** *Palmito.*

*a.* Unknown to informants.

*b.* Not determinable. Cultivated in gardens.

*c.* Ornamental only.

*d.* Juan Castro, MG.

**309.** *Yerba amargosa.*

*a.* Unknown to informants.

*b. Parthenium hysterophorus* L. Determined by Reed C. Rollins. Not cultivated.

*c.* Used to make brooms (BR).

*d.* Benita Ramos, MG.

*e.* Latter informant denies this is *yerba amargosa;* knows neither Totonac nor Spanish name.

**310.** See No. 182.

**311.** *Coyolillo de ratón.*

*a.* išmokó¢i·yak.

*b. Priva lappulacea* (L.) Pers. Wild; weed which endangers maize fields.

*c.* No utility.

*d.* MG.

**312.** *Frijol tripa de tuza.*

*a.* išpaluwa sa·ka. (paluwa, *tripa;* sa·ka, *tuza*).

*b. Vigna* sp. Seed determined by Hugh Cutler as *Vigna unguiculata* (L).) Walp. Cultivated; considered native.

*c.* Edible.
*d.* Lorenzo Xochigua, MG.

313. *Cacahuate.*
*a.* No Totonac name.
*b. Arachis hypogaea* L. Cultivated in one garden.
*c.* Effectively unknown in Tajín.
*d.* Juan Castro. Flora García.

314. Unknown to informants.
*a.* limaštákan (*palo para pintura*).
*b.* Not determinable.
*c.* Used by girls to encourage growth of hair: leaves macerated in water and liquid used as shampoo rinse (LX). Used as magical "cure" for Negrito and Huahua dancers (DS, MB). Leaves used as blue dye for clothing and pottery vessels (EB, ML).
d. Lorenzo Xochigua, Donato Santes, MG, Esteban Bautista, ML.
*e.* Taxonomist believes this the same as No. 212.

315. *Chataya.*
*a.* čâta.
*b.* Not determinable. Wild shrub; "grows anywhere." Produces small black, globular fruit.
*c.* Raw fruit edible.
*d.* MG.
*e.* Informant distinguishes between this and another plant of same name which produces similar fruit.

316. *Epazote del zorrillo.*
*a.* kašni ʌsa.
*b. Petiveria alliacea* L. Wild.
*c.* Remedy for children suffering from "fright" or magical contact with dead, evidenced by sleepiness and night sweats. Leaves placed on coals and child held in smoke; then alcohol sprayed from mouth on green leaves; latter macerated well and rubbed over entire body. Cure may be undertaken by anyone, not necessarily a shaman (MG, LX). Remedy for flatulence: tea made of plant (ML).
*d.* MG, Lorenzo Xochigua, ML.

317. *Ruda.*
*a.* ruda (*sic*).
*b. Ruta graveolens* L. Cultivated in house clearings.
*c.* General tonic: "punch" with rue flavor (p. 164).
*d.* Lorenzo Xochigua.

318. *Albahaca.*
*a.* Not recorded.
*b. Ocimum* sp. Cultivated in house clearings.
*c.* Sprays used as body whip in sweat bath. Sprays boiled and liquid used as ordinary bath; also as bath following childbirth (LX); and in bath of seven herbs (No. 15). Remedies for magical *malviento*: water boiled with *albahaca;* liquid used as bath (LX, MG). Face brushed with sprays and latter thrown away (BR).
*d.* Lorenzo Xochigua, MG, Benita Ramos.
*e.* See also No. 319.

319. *Albahaca.*
*a.* Not recorded.
*b. Ocimum micranthum* Willd. Presumably cultivated.
*c.* Used as substitute for No. 318. Leaves burned beneath cradle of child affected with *malviento* (MG).
*d.* Lorenzo Xochigua, MG.
*e.* First informant calls this *albahaca sencilla*, "not the same" as No. 318.

320. *Zarzilla.*
*a.* pašmaltúku.
*b. Smilax spinosa* Mill.
*c.* Presumably no utility.
*d.* Manuel de la Luz.

321. Unknown to informant.
*a.* pusumá kiwi?; pusumátkiwi.
*b. Guatteria* sp. Small tree or shrub in *monte alto;* formerly more plentiful than at present.
*c.* Used for roof withes; now being replaced by more abundant *capulín* (Nos. 21, 85).
*d.* MG.

322. Unknown to informant.
*a.* katékš kiwi?.
*b. Prunus samydoides* Schlecht. *Monte alto* shrub.
*c.* Used as roof poles.
*d.* MG.

323. *Huele de noche, negro.*
*a.* san?tipúskat.
*b. Solanum nudum* H. B. K.
*c.* Used in bath of seven herbs (No. 15) [presumably interchangeable with No. 80].
*d.* MG.

324. *Moral; mora.*
*a.* čičíti?: čičí?ti
*b. Chlorophora tinctoria* (L.) Gaud. *Monte alto* tree.
*c.* Wood used as house posts and for uprights (not cogs) of wooden sugar mill (MG). Limited use as yellow dye (PP, MM).
*d.* MG, Pedro Pérez, Mercedes Morales.

325. *Mozote blanco.*
*a.* štuyu?.
*b. Bidens pilosa* L. var. *radiata* Sch.-Bip. Harmful weed in maize fields.
*c.* No utility.
*d.* MG.
*e.* See No. 20.

326. *Guayabo.*
*a.* a'siwit.
*b. Psidium guajava* L. *Monte* fruit tree; occasionally cultivated in maize fields and house clearings; by some, considered exclusively a volunteer.
*c.* Fruit edible (MG). Remedy for mild stomach ache: tea described under No. 41. This tea "weaker" than that of *pata de vaca* (No. 69) (AM).
*d.* MG, AM.

327. *Capulín de sabana.*
*a.* aktaláuwat.
*b. Parathesis serrulata* (Sw.) Mey. Wild along arroyos.
*c.* Fruit edible.
*d.* MG.

328. *Rosedal.*
*a.* No Totonac name.
*b. Lawsonia inermis* L. Cultivated in house clearing.

*c.* Flower used as altar decoration; young girls decorate their hair with a spray.
*d.* MG.

329. *Cruceta.*
*a.* kulu·s?túkun šaláqsu? (kulu·s?, *cruz;* túkun, *espina;* šaláqsu?, *chico*).
*b. Randia xalapensis* Mart. & Gal. Wild shrub.
*c.* No utility.
*d.* MG.
*e.* Not to be confused with No. 175, same Spanish name.

330. *Huesillo.*
*a.* kuyú kiwi?.
*b.* Probably *Wimmeria concolor* Schlecht. & Cham. *Monte alto* tree.
*c.* Wood used for digging stick, roof poles, and fuel.
*d.* MG.

331. *Camote del tlacuache.*
*a.* išmantaštán (manta, *camote*).
*b. Stigmatophyllum humboldtianum* (DC.) Jacq.
*c.* No utility.
*d.* MG.

332. *Limón.*
*a.* limúnᴬš (*sic*).
*b. Citrus aurantifolia* (Christmann) Swingle. Cultivated fruit tree.
*c.* Fruit edible.
*d.* MG.

333. *Friega platos.*
*a.* patsumakášil.
*b. Callicarpa acuminata* H. B. K. Wild.
*c.* Leaves used to scour greasy plates.
*d.* MG.

334. See No. 244.

335. See No. 131.

336. *Carrizo del ratón.*
*a.* iškatičiya.
*b. Lasiacis divaricata* (L.) Hitchc. Wild.
*c.* Hollow "cane" used formerly as pipe stem.
*d.* MG.

337. *Guasimilla.*
*a.* čékait.
*b. Trema micrantha* (L.) Blume.
*c.* Wood used for house beams and roof poles.
*d.* MG.

338. *Escolín.*
*a.* skolín.
*b.* Not determinable. *Monte alto* tree.
*c.* Wood used for house posts; slender trunks as beams in native house.
*d.* MG.

339. *Gurupillo.*
*a.* pi·ja.
*b. Couepia dodecandra* (DC.) Hemsl. Cultivated in house clearing, occasionally in milpa.
*c.* Ripe fruit eaten raw.
*d.* MG.

340. *Sanatoros.*
*a.* ta·šak.
*b. Cissus sicyoides* L. Vine; "grows anywhere."
*c.* Medicinal: stem laid on coals to release liquid; latter applied to pimples to bring them to a head.
*d.* MG.

341. See No. 80.

342. *Palo blanco.*
*a.* saqáqakiwi (saqáqa, *blanco;* kiwi, *palo*).
*b.* Probably *Acalypha leptopoda* Muell. Arg. Shrub.
*c.* Wood used as fuel (MG); to make baseball bats (AB).
*d.* MG, Antonio Bautista.
*e.* Informant distinguishes between this shrub and a tree of same Spanish and Totonac names, the wood of which used for ax handles and in house construction; its fruit eaten by wild pheasants.

343. See No. 141.

344. *Mirasol.*
*a.* pučičinišánat (čičini, *sol,* šánat, *flor*).
*b. Tithonia diversifolia* (Hemsl.) A. Gray. Cultivated in house clearings.
*c.* Flower used to decorate altar.
*d.* MG.
*e.* Not to be confused with No. 120, tree with same Spanish and Totonac names.

345. *Hule.*
*a.* ɸakat.
*b. Castilla elastica* Cerv. Wild.
*c.* See text (pp. 83–84).
*d.* Nemesio Martínez, José María García.

346. Name unknown.
*a.* Name unknown.
*b. Cassia fruticosa* Mill. Wild.
*c.* Use unknown.
*d.* Specimen collected without aid of informants.

347. *Cachichín* (*sic*).
*a.* kačičín.
*b. Oecopetalum mexicanum* Greenm. & Thompson. Verified by R. A. Howard. Reputedly cultivated by Totonac of Misantla area.
*c.* Fruit said to be important food item in Misantla zone.
*d.* Specimen provided through kindness of Ing. José García Payón.
*e.* Not found in Tajín as far as we know; no details concerning cultivation or preparation of food.

348. *Cabeza de hormiga.*
*a.* čakčakanč·an.
*b. Teucrium cubense* Jacq. subsp. *chamaedrifolium* (Mill.) Epl.
*c.* Presumably no utility.
*d.* MG.
*e.* See No. 166, same species identified by another informant.

349. *Abalo blanco.*
*a.* saqaka akti.
*b. Bumelia* sp., probably *B. persimilis* Hemsl. *Monte alto* tree; not found in abandoned milpas.

*c.* Freshly extracted latex used to adulterate chicle (No. 191) (NM).

*d.* Nemesio Martínez, MG.

*e.* First informant distinguishes between *ábalo blanco* and *negro* (siksaka akti); latter produces no chicle but its hard wood said to be used in making musical instruments (not locally). See also No. 152, which informants consider distinct.

**350.** *Zapote mamey.*

*a.* ličukut'ja·ka.

*b. Calocarpum sapota* (Jacq.) Merr. Cultivated.

*c.* Edible fruit.

*d.* Nemesio Martínez.

**351.** *Zacate fino de gallina.*

*a.* No Totonac name.

*b. Cynodon dactylon* (L.) Pers. Determined by J. R. Swallen. Weed in maize fields. Also cultivated from seed in house clearings, to feed fowl.

*c.* Poultry eats seeds.

*d.* MG, Nemesio Martínez.

**352.** *Zacate fino.*

*a.* stumtisakat.

*b. Leptochloa virgata* (L.) Beauv. Determined by J. R. Swallen. Wild; troublesome weed in maize fields.

*c.* Used as fodder.

*d.* Nemesio Martínez.

**353.** *Zacate de elote.*

*a.* takʌa sakat.

*b. Panicum fasciculatum* Sw. Determined by J. R. Swallen. Troublesome weed in maize fields.

*c.* No utility.

*d.* Nemesio Martínez, MG.

**354.** See No. 58.

**355.** *Malva de bolita.*

*a.* No Totonac name.

*b. Sida rhombifolia* L. Weed in maize fields.

*c.* No utility.

*d.* Bernabé Xochigua.

**356.** See No. 93.

**357.** *Zacate grama.*

*a.* pašma sakat.

*b. Paspalum conjugatum* Berg var. *pubescens* Doell. Determined by J. R. Swallen. Wild along trails; not a threat to maize field.

*c.* Fodder.

*d.* Nemesio Martínez.

**358.** Unknown to informant.

*a.* nakaiya.

*b.* Probably *Ipomaea* sp. Wild vine; flower said by one informant to be white, by another to be purple.

*c.* Stem cut into pieces and added to rubber latex (No. 345) as coagulating agent; no cooking required.

*d.* Magdaleno Méndez.

**359.** *Chipila.*

*a.* čipilanin (*sic*).

*b. Crotalaria incana* L. Wild.

*c.* No utility.

*d.* Rutilio Olmos.

*e.* See No. 91.

**360.** *Sandia del ratón; sandia de la lagartija.*

*a.* Not recorded.

*b. Melothria* sp. Determined by L. H. Bailey. Troublesome weed in maize fields.

*c.* No utility.

*d.* Bernabé Xochigua.

**361.** *Melón.*

*a.* Not recorded.

*b. Cucumis melo* L. var. *chito* Naud. Determined by L. H. Bailey. Cultivated in milpa.

*c.* Ripe fruit eaten raw.

*d.* Mauro Pérez.

**362.** *Palma coyol; coyol.*

*a.* məkɔt?.

*b.* Probably *Acrocomia mexicana* Karw. Determined by L. H. Bailey. Wild; spared when fields are cleared.

*c.* Nuts eaten by children; oil very rarely used in cooking. Formerly palm nut hollowed and used as pipe bowl (p. 176).

*d.* Unaccompanied by informant when specimen collected.

**363.** *Zacate salado.*

*a.* skoko sakat.

*b. Leptochloa filiformis* (Lam.) Beauv. Determined by J. R. Swallen. Troublesome weed in maize fields.

*c.* No utility except possibly (?) as fodder.

*d.* Nemesio Martínez, Bartolo Simbrón.

*e.* According to informants, two weeds most harmful to maize fields are this and *zacate fino* (No. 352).

**364.** *Palma real.*

*a.* Not recorded.

*b. Scheelea liebmannii* Becc. Determined by L. H. Bailey.

*c.* Used for house thatch, and woven palm figures for altar ornament.

*d.* Unaccompanied by informant when specimen collected.

**365.** *Gallinitas.*

*a.* sikínsut.

*b. Canavalia villosa* Benth. Wild.

c. Children make whistles from united filaments of stamens.

*d.* ML.

**366.** *Bazo de venado.*

*a.* Not recorded.

*b. Passiflora coriacea* Juss.

*c.* Remedy for earache: leaf roasted and juice squeezed into ear.

*d.* ML.

*e.* By another informant, same species given different Spanish name and distinct use; see No. 244.

**367.** Unknown to informants.

*a.* laqaštʌku?.

*b. Pithecellobium* sp. (?).

*c.* No utility.

*d.* ML, MG.

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| Zinnia elegans Jacq. | Compositae | 281 |
| Zuelania roussoviae Pittier | Flacourtiaceae | 28 |

## MONTE ALTO TREES AND LIANAS

Modesto González has prepared a list of the trees and lianas he considers characteristic of *monte alto*. Below, they have been arranged in numerical order to correspond with the herbarium catalog.

Trees include: *chote* (No. 10), *ceiba* (No. 14), *palo de volador* (No. 28), *ubero* (No. 65), *palo de agua* (No. 84), *zapote cabello* (No. 90), *ojite* (No. 98), *ébano* (No. 152), *misanteca* (No. 169), *palo de rosa* (No. 171), *chijol* (No. 176), *jobo* (No. 186), *pipín* (No. 190), *zapote chico* (No. 191), *frijolillo* (No. 193), *caoba* (No. 194), *zapote de calentura* (No. 198), *alzaprima* (No. 206), akás?ti (No. 218), *cedro* (No. 219), *zapote mante* (No. 220), *higo* (No. 221), *higuera* (No. 222), *chaca* (No. 228), *moral* (No. 324), and *escolín* (No. 338).

For some obscure reason, he includes a yucca (No. 230) with the *monte alto* trees. For two of the latter, we have no specimens: *tenpesquite* (smukútkiwi) and *mocoquihui* (*sic*) (mukúkiwi).

On Don Modesto's list of lianas, the following appear: *ajillo* (No. 40), *bejuco blanco* (No. 73), *chilillo* (No. 112), *bejuco colorado* (No. 131), *bejuco real* (No. 133), *bejuco de parra* (No. 187), *capitas* (No. 200), *bejuco de San Diego* (No. 201), and *bejuco sarnoso* (No. 305). An additional vine, the *bejuco de Santa Catarina*, is not represented among our specimens.

## APPENDIX D

# BIRDS

In the course of our stay in Tajín, it turned out that Mr. Palerm was obtaining from Modesto González a good many isolated observations concerning local birds. Accordingly, a simple outline was prepared, and the two worked more or less systematically over a period of several days, the result being the list of birds which appears below.

It makes no pretense at completeness, but most of the common birds in the Tajín region appear to be included, as well as the vampire bat. Data are based on the informant's statements, with occasional supplementary comments from other individuals. For the sake of brevity, the original wording has been condensed in the course of translation.

The various birds are arranged in alphabetical order, under common Spanish name, and numbered. In one case (No. 17), the Spanish name is unknown.

Information is given according to the following key: *a*, Totonac name; *b*, translation; *c*, aspect; *d*, call; *e*, habits; *f*, food; *g*, how hunted; *h*, utility; *i*, beliefs; *j*, suggested identification. Omission of a letter indicates that we have no corresponding data. For entries under *j*, we are indebted to Dr. Starker Leopold, who read a first draft of the appendix and, on the basis of the descriptions, was kind enough to suggest a number of identifications.

Data concerning hunting and utility are summarized in table 21. In several instances (Nos. 12, 25, 27, 28), the bird is edible, but the informant has stated merely that the meat is smoked. Ordinarily, smoking is no more than a preservative measure, preliminary to further preparation. As a consequence, the table indicates that we do not know the final form in which the meat of these particular birds is served.

TABLE 21.—*Local birds*

| No. | Name | Manner of hunting | | | Hunted for— | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Various reasons | | | | Food | | | | |
| | | Not hunted | Shotgun | Traps | Predatory, pest | Pet | Medicinal | Other magical beliefs | Broth | Stew | *Mole* sauce | Not specified | Not eaten |
| 1 | *Aguililla* | ---- | × | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × |
| 2 | *Boberos* | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | × | ---- | ---- | ---- |
| 3 | *Calandria* | × | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | × |
| 4 | *Chachalaca* | ---- | × | ---- | ---- | ---- | ---- | ---- | × | × | × | ---- | ---- |
| 5 | *Chénchere* | ---- | × | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | × | ---- |
| 6 | *Cholinche* | ---- | × | × | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × |
| 7 | *Chuparrosa* | ---- | ---- | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- |
| 8 | *Clarín* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 9 | *Codorniz* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 10 | *Coguito* | ---- | × | × | ---- | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- |
| 11 | *Cotorra* | ---- | × | × | ---- | × | ---- | ---- | ---- | ---- | ---- | × | ---- |
| 12 | *Garceta* | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × | ---- |
| 13 | *Gavilán* | ---- | × | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × |
| 14 | *Gavilán* | ---- | × | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × |
| 15 | *Golondrina* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 16 | *Lechuza* | ---- | × | ---- | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- | × |
| 17 | liquaλ | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 18 | *Morrocoyo* | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × | ---- |
| 19 | *Murciélago* | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × |
| 20 | *Pájaro alegrón* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 21 | *Pájaro cardenal* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 22 | *Pájaro carpintero* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 23 | *Pájaro de verano* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 24 | *Paloma* | ---- | × | × | ---- | ---- | ---- | ---- | × | × | × | ---- | ---- |
| 25 | *Papán* | ---- | × | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- | × | ---- |
| 26 | *Perdiz* | ---- | × | × | ---- | ---- | ---- | ---- | × | × | × | ---- | ---- |
| 27 | *Perico* | ---- | × | ---- | ---- | × | ---- | ---- | ---- | ---- | ---- | × | ---- |
| 28 | *Pito real* | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × | ---- |
| 29 | *Pizcuyu (sic)* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 30 | *Primavera* | × | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 31 | *Quebranta huesos* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 32 | *Sinsonte* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 33 | *Tapacamino* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| 34 | *Tecolote* | ---- | × | ---- | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- | × |
| 35 | *Tecolotillo* | ---- | × | ---- | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- | × |
| 36 | *Torcaza* | ---- | × | ---- | ---- | ---- | ---- | ---- | × | ---- | × | ---- | ---- |
| 37 | *Tordo* | ---- | × | ---- | × | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- |
| 38 | *Tortolita* | ---- | × | × | ---- | ---- | ---- | ---- | × | × | × | ---- | ---- |
| 39 | *Totocalca* | ---- | × | × | ---- | ---- | ---- | ---- | ---- | × | × | ---- | ---- |
| 40 | *Vaquero* | ---- | × | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | × |
| 41 | *Zopilote* | ---- | × | ---- | ---- | ---- | × | ---- | ---- | ---- | ---- | ---- | ---- |
| 42 | *Zopilote rey* | × | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- |

1. *Aguililla.*

*a.* qua'iá akšupín.

*b.* akšupín, with crest; to differentiate from qua'iá (*gavilán*, No. 14).

*c.* Size of zopilote (No. 41); looks like a *gavilán* (No. 13), but crest and plumage same color: brown, shot with white.

*d.* kuš kuš.
*e.* Current throughout the year; found in *monte.*
*f.* Poultry, birds.
*g.* Shotgun; to prevent preying upon domestic fowl.
*h.* None.
*i.* Its call announces a sunny day.
*j.* Probably crested eagle (*Spizaetus* sp.).

2. *Boberos.*
*a.* šmaštuna-*bobos.*
*b.* šmaštuna: "to open, permitting emergence"; *bobos:* a river fish. Free translation: open to let *bobos* emerge, because appearance of bird and fish coincident.
*c.* Size of hawk (No. 13 or No. 14); chocolate-colored plumage.
*d.* None.
*e.* Bird of passage, seen only in flocks. First appears in November, sometimes in December. Roosts on trees at night.
*f.* Fish.
*g.* Shotgun, while roosting.
*h.* Edible; strong fish flavor. Smoked and served also as stew (*huatape*).
*j.* Probably cormorant (*Phalacrocorax olivaceus*); possibly water turkey (*Anhinga anhinga*).

3. *Calandria.*
*a.* šuk?čaλ.
*c.* Size of *tortolita* (No. 38); black plumage, yellow breast.
*d.* Sings sweetly in early morning.
*e.* Current "everywhere," throughout the year; baglike nest hangs from trees.
*f.* Seeds and worms.
*g, h.* Not hunted. Sometimes young birds taken from nests, kept as pet songbirds, but do not grow.
*j.* Oriole (*Icterus* sp.).

4. *Chachalaca.*
*a.* špatá.
*c.* Size of *papán* (No 25); brown plumage, white-tipped tail.
*d.* wil?patá.
*e.* Current throughout the year; found in *monte.*
*f.* Vanilla blossoms; *palo blanco* seeds (Appendix C, No. 342).
*g.* Shotgun.
*h.* Edible. Tasty; chicken flavor; in broth, stew (*huatape*), or with *mole* sauce. Eggs sometimes collected, hatched by domestic hen; birds usually escape when able to fly, therefore sometimes eaten while still young.
*j. Ortalis vetula.*

5. *Chénchere.*
*a.* lek?šú kok?čiliλ.
*b.* lek?šú, means small, to differentiate from the *pájaro carpintero* (No. 22). According to one informant there are two kinds of *chénchere:* akčili, which is small; kokčili, large with red crest.
*c.* Size of small dove (No. 38); mottled, with red head. Long feet and nails; no tail or crest. Another informant describes bird as having white "neckerchief."
*d.* kok?čiliλ.
*e.* Current throughout the year, near cornfields.
*f.* Dry and green corn, wild chili, beans, etc.
*g.* Shotgun.
*h.* Edible, but usually killed because a milpa pest.
*i.* One informant says this bird pecks hard and continuously when it is going to rain.

6. *Cholinche.*
*a.* spitú.
*c.* Size of small dove (No. 38); black plumage.
*d. José, José.*
*e.* Current throughout the year, in *monte.*
*f.* Chili, sprouting corn seeds, dry maize.
*g.* Traps, shotgun.
*h.* Inedible. Hunted because a crop pest.

7. *Chuparrosa.*
*a.* jun?.
*c.* Size of *pájaro alegrón* (No. 20); no tail; long, thin bill; dark gray plumage. One informant describes the bird as small, green.
*d.* Sings sweetly.
*e.* Current "everywhere," throughout the year.
*f.* Nectar from flowers; blossoms (*sic*) of orange, *manzanita,* and *liliake de venado* (both latter unidentified). When these foods out of season, "the bird endures hunger."
*h.* Medicinal; smoked and eaten as a cure for *alferesia* (unidentified illness). The eggs, taken raw, are said to cure heart pains, but must be eaten on Fridays only.
*j.* Hummingbird (may be one of 10 species).

8. *Clarín.*
*a.* kiλ?¢ałanks.
*b.* Sonorous mouth (*boca que suena*).
*c.* Size of small dove (No. 38).
*d.* Bell-like; sings only in May.
*e.* Not plentiful.
*g.* Not hunted.
*j.* Thrush (*Myadestes unicolor* [?]).

9. *Codorniz.*
*a.* akč?kúko.
*c.* Size of *paloma* (No. 24).
*d.* Whistles, saying; čač?pankłus.
*e.* Current throughout the year, in hilly terrain.
*f.* Worms, fruit.
*g.* Not hunted.
*i.* Cry said to mean "foot of the cross" in Totonac, "because they are going to crucify Our Lord." As an afterthought, informant uncertain the *codorniz* sings thus.
*j.* Quail (probably one of the wood quails such as *Dactylortyx thoracicus*).

10. *Coquito.*
*a.* kokos.
*c.* Smaller than dove (No. 38); chocolate-colored plumage.
*d.* ko ko ko.
*e.* Current throughout the year, close to cornfields.
*f.* Corn, chili, *espino blanco* seeds (Appendix C, No. 62).
*g.* Traps, shotgun.
*h.* Edible in broth, or smoked (presumably preliminary to further preparation).

*i.* "When the Mexica were looking for a site for their capital, this bird sang 'teoi,' which in Mexicano means 'let's go.'" This anecdote told in Gildardo Muñoz by Constancio Reyes, a school teacher from Papantla.

11. *Cotorra.*

*a.* kɔčiyu.

*b.* None.

*c.* Size of male *tordo* (No. 37); green with red head.

*e.* Starts appearing in January and February; remains until June, Found in *monte.*

*f.* Tree seeds (*sic*).

*g.* Traps, shotgun.

*h.* Edible; also kept as caged pet and taught to speak.

*i.* "Incapable of learning Totonac."

*j.* Parrot (*Amazona* [?]).

12. *Garceta.*

*a.* lo?qó.

*c.* Size of *totocalca* (No. 39); long, thin legs, white plumage.

*e.* Appears in flocks during July and August; frequents small streams and ponds. Leaves at start of dry season.

*f.* Fish.

*g.* Shotgun.

*h.* Edible smoked (presumably preliminary to further preparation); "some like it."

*j.* Snowy egret (?).

13. *Gavilán.*

*a.* škíkin.

*b.* None.

*c.* Size of *golondrina* (No. 15); chocolate-colored plumage.

*d.* None.

*e.* Current throughout the year, in *monte.*

*f.* Preys on poultry.

*g.* Shotgun.

*j.* Hawk sp. (?).

14. *Gavilán.*

*a.* qua?iá.

*b.* None.

*c.* Size of *tecolote* (No. 34); brown and white plumage.

*d.* kuč kuč kuč.

*e.* Current throughout the year, in *monte.*

*f.* Poultry.

*g.* Shotgun.

*h.* None; bird of prey.

*j.* Hawk sp. (?).

15. *Golondrina.*

*a.* akapupačna.

*b.* "They are cleaning the sky"; (*están limpiando el cielo*).

*c.* Size of small dove (No. 38); wings larger; chocolate-colored plumage.

*d.* piš.

*e.* Bird of passage; appears in rainy season (April–May).

*g.* Not hunted.

*j.* Swallow sp. (?).

16. *Lechuza.*

*a.* akapunímušni.

*c.* Size of *tecolote* (No. 34); chocolate-colored plumage.

*d.* Hisses: pis, pis.

*e.* "Travels alone"; appears with the mosquitoes"; never stays long in one place.

*g.* Shotgun. Occasionally hunted out of curiosity, and to stop call, which is an ill omen.

*h.* None.

*i.* "They live on air alone"; carry illness (fever and consumption) wherever they perch and hoot, but infirmity contracted only if their call is answered.

17. Unknown to informant.

*a.* liquaλ.

*c.* Size of *papán* (No. 25); orange-red plumage, white tail.

*d. Pedro.*

*e.* Current throughout the year, near cornfields.

*f.* Corn, fruit, seeds.

*g.* Not hunted.

18. *Morrocoyo.*

*a.* mutmut (*sic*).

*c.* Size of dove (No. 24); green breast, blue crest, black wings, and long, white-tipped tail.

*d.* mut-mut; according to one informant, the song is ugly.

*e.* Current "everywhere," throughout the year. Sleeps in holes burrowed in ground.

*g.* Shotgun.

*h.* Occasionally eaten.

*i.* According to one informant, this bird keeps a guardian snake in its hole; snake does not injure bird and protects it from other serpents.

*j.* Motmot(?).

19. *Murciélago.*

*a.* škita .

*c.* Black, with rodent face.

*e.* Enters the kitchen to eat brown sugar. Bites horses and pigs; sucks their blood and that of sleeping humans. "One bit Antonio Morales; he lost a great deal of blood."

*f.* Brown sugar, fruit, and blood.

*j.* Vampire bat.

20. *Pájaro alegrón.*

*a.* tan?šilit?.

*c.* Very small and "round"; tailless; orange plumage, white-striped neck.

*d.* Whistles.

*e.* Current throughout the year, along roadsides and near cornfields.

*g.* Not hunted.

*i.* "They are happy because their song brings bad luck. For example, someone waits on the road to kill you; something has gone wrong at home—a child has been burned or has fallen." Another informant speaks of a bird of ill omen, called tan¢iλ; another apparently calls the same bird lipsewa or tan¢iλ.

21. *Pájaro cardenal.*

*a.* ta?tímulu?.

*c.* Size of *tortolita* (No. 38); the male red and crested; the female, orange-colored.

*e.* Current "everywhere," throughout the year.

*g.* Not hunted.

*j.* Cardinal (*Richmondena cardinalis*).

22. *Pájaro carpintero.*

*a.* ša?lenqa kok čiliλ.

*b.* ša?lenqa, large; to differentiate bird from *chénchere*, (No. 5).

*c.* Size of *papán* (No. 25); legs longer than those of the *chénchere;* nails long; tailless; black, with red crest.

*d.* min, min.

*e.* Current throughout the year, in bamboo thickets.

*f.* Wood borers found in rotten tree trunks; tests wood with bill, to determine if it is hollow.

*g.* Not hunted.

*j.* Woodpecker.

23. *Pájaro de verano.*

*a.* ličkiničpun, isiauaná? ičičiní.

*b.* First, summer bird; second uncertain, but čičiní, the term for sun.

*c.* Size of *paloma* (No. 24); black, with yellow breast. Another informant describes the back as green and blue; the breast, cream-colored.

*d.* Like a turkey's cry.

*e.* Current throughout the year, in *monte alto* and abandoned milpas; sings only in summer.

*f.* Worms, fruit.

*g.* Not hunted.

*i.* Its singing announces a period of intense heat.

*j.* (*Trogon* sp.).

24. *Paloma.*

*a.* tantaš?nan, tanɕuɕná.

*b.* None.

*c.* Dark gray; white-tipped tail.

*d.* Coos.

*e.* Current "everywhere," throughout the year.

*f.* Seeds, especially *laurel* (Appendix C, No. 130): maize, chili, etc.

*g.* Traps, shotgun.

*h.* Edible. Meat good smoked, in broth, stew (*huatape*), and with *mole* sauce.

*i.* Owning and breeding these birds does not signify bad luck, according to one informant; but if a stray enters the house, sickness or death will follow. Or if there are young girls in the home, someone will ask for them in marriage. Hunted, not because they are malevolent; "they merely give warning."

*j.* White winged dove (*Zenaida asiatica*).

25. *Papán.*

*a.* pa?ká.

*b.* None.

*c.* Size of *tordo* (No. 37); brown plumage.

*d.* pan, pan.

*e.* Current "everywhere," throughout the year. Nests in the early dawn, during February.

*f.* Green and dry corn, chili, beans, etc.

*g.* Shotgun.

*h.* Meat not good, although sometimes smoked (preliminary to further preparation?). Said to be infested with lice. Meat of yellow-bill *papán*, served in plain broth, will cure whooping cough.

*j.* Brown jay (?) (*Psilorhinus morio* [?]); called *pepe* elsewhere in Veracruz.

26. *Perdiz.*

*a.* čávełan (*sic*).

*b.* None.

*c.* Size of *totocalca* (No. 39), but heavier; tailless; chocolate-colored plumage.

*d.* Shrill whistle, when nesting in May and June.

*e.* Current throughout the year; in *monte.*

*f.* Corn, chili, beans, seeds, etc.

*g.* Traps, shotgun, and birdcall.

*h.* Edible. Meat popular smoked, in broth, with *mole* sauce, and in stew (*huatape*).

*j.* Tenamon (*Crypturellus cinnamomeus* [?]).

27. *Perico.*

*a.* piłikito (*sic*).

*c.* Size of *tortolita* (No. 38); green plumage.

*e.* Current throughout the year, in *monte;* nests in decayed tree trunks.

*f.* Tree seeds (*sic*).

*g.* Shotgun.

*h.* Edible; meat smoked (presumably preliminary to further preparation). Birds sometimes captured in *monte alto.* Caged; fed mashed banana; and taught to speak. Trained birds sold in Papantla.

*j.* Parakeet (*Aratinga asteca* [?]).

28. *Pito real.*

*a.* pi?tółial (*sic*).

*b.* None.

*c.* Size of *tordo* (No. 37); long, thick, spoon-shaped bill; black plumage; yellow breast and neck. According to another informant, colors are white, blue, red and black.

*d.* Rattles (*como matraca*).

*e.* Appears in the *monte* in September; remains only a month.

*f.* Insects.

*g.* Shotgun.

*h.* Edible, but not well liked; meat smoked preliminary to further preparation. Hunted for its bill, skin, neck, and breast feathers. Not considered medicinal.

*j.* Toucan (*Ramphastos sulfuratus*).

29. *Pizcuyu* (*sic*).

*a.* piq?kuyú.

*c.* Size of *golondrina* (No. 15); black plumage.

*d.* piq?kuyú, piq?kuyú.

*e.* Current "everywhere," throughout the year.

*f. Tepehua* ants; large (*garrapatas*) and hard-shelled (*conchudos*) ticks.

*g.* Not hunted.

*h.* Placed on riding and pack animals to rid them of parasites.

*j.* Possibly cowbird (*Molothrus ater*).

30. *Primavera.*

*a.* pa?toktok.

*c.* Size of *cholinche* (No. 6); under plumage yellow and orange; back and wings mottled gray brown.

*d.* Sings prettily, like the mockingbird (No. 32).

*e.* Current throughout the year, in *monte bajo* and abandoned milpas; sings only in March and April.

*f.* Corn, wild chili, and *monte* fruits.

*g.* *h.* Not hunted. Sometimes taken from nest to be kept as pet; fed mashed banana and maize dough.

*j.* Thrush (*Turdus grayi* [?]).

31. *Quebranta huesos.*

*a.* kiλ?lúkut.

*b.* Mouth of bone.

*c.* Size of *cholinche* (No. 6); black plumage; bone-white beak.

*d.* Cries kwai, in the heat of the day; informant adds that the male sings lí?pun, lí?pun, (*está triste*: "he is sad").

*e.* Current "everywhere," throughout the year.

*f.* Corn.

*g.* Not hunted.

32. *Sinsonte.*

*a.* pa·míščin.

*c.* Size of *primavera* (No. 30); gray and white-striped.

*d.* Sings sweetly, but only in March, April, and May.

*e.* Found "everywhere."

*g.* Not hunted.

*i.* If caged, will die.

*j.* Mockingbird (*Mimus polyglottis*).

33. *Tapacamino.*

*a.* pu·yut, pu?úyut, puswaka.

*c.* Size of *paloma* (No. 24); white and dark gray plumage.

*d.* *Caballero* (gentleman) and pu?úyut.

*e.* Current throughout the year; by day, in *monte;* by night along trails.

*g.* Not hunted.

*i.* According to one informant, the *tapacamino* seeks the road when there is a moon, flies and then falls to the ground.

*j.* Pauraque (*Nyctidromus albicollis*).

34. *Tecolote.*

*a.* monks?nó?

*b.* None.

*c.* Size of small barnyard hen; chocolate-colored plumage.

*d.* monks? and ai.

*e.* Current "everywhere," throughout the year; not plentiful.

*f.* Rabbits, rats, snakes, cats, etc.

*g.* Shotgun.

*h.* Not eaten.

*i.* "When the *tecolote* sings he is foreseeing evil and is crying maledictions." Said to be the devil's "constable" (*topil*); brings news of sickness and death. Because of this, sometimes killed (ftn. 10, p. 76). Witches may send illness via the *tecolote.* In this case, one must find a shaman (*rezandero*), man or woman, to pray and make three offerings, each of four candles, of the wax of the Old World bee; before candles lighted, patient's body stroked with them.

*j.* Owl (possibly *Ciccaba virgata*).

35. *Tecolotillo.*

*a.* kú?lulu.

*b.* None.

*c.* Size of index finger; abundant dark gray plumage. Looks like the *tecolote* (No. 34), but smaller.

*d.* Sometimes, ai; at other times, kuku.

*e.* Current throughout the year, in *monte.*

*f.* Unknown to informant.

*g.* Shotgun.

*h.* None.

*i.* Like the *tecolote,* it is the devil's "constable," warning of death and illness. Its cry, ai, frightens people, because it sounds human.

*j.* Owl (probably pygmy owl, *Glaucidium brasilianum*).

36. *Torcaza.*

*a.* tuč?tukulut.

*b.* "*Hay muchos huesos*" (there are many bones).

*c.* Size of *paloma* (No. 24); dark-brown plumage.

*d.* tuč?tukulut.

*e.* Current throughout the year, close to milpas.

*f.* Corn, wild chili, and pulúš seed (Appendix C, No. 3).

*g.* Shotgun.

*h.* Edible; smoked, in broth, and with *mole* sauce.

*i.* After the Flood, the *torcaza* was the first to be released from the ark. On flying forth and viewing the devastation, he cried in Totonac, "There are many bones"; hence his name.

*j.* Pigeon, probably red-billed (*Columba flavirostris*).

37. *Tordo.*

*a.* čaks?ní.

*c.* Size of *papán* (No. 25); black plumage.

*d.* Whistles.

*e.* Current throughout the year; nests in thickets of *palma real* (Appendix C, No. 364). Cornfield pest.

*f.* Maize.

*g.* Shotgun.

*h.* Seldom eaten; not tasty. May be smoked or prepared in broth.

*j.* Crow (?).

38. *Tortolita.*

*a.* puk?nut.

*c.* Smaller than the *paloma* (No. 24); the male, blue; the female, brown.

*d.* puk?puk?

*e.* Current throughout the year, along edges of cornfields.

*f.* Corn, wild chili, *laurel* seed (Appendix C, No. 130).

*g.* Traps, shotgun.

*h.* Eaten, as are doves (No. 24).

*i.* If it enters the house, a young man will ask to marry the daughter of the family; if there is no daughter, the visit presages illness.

*j.* One of the small doves (possibly *Claravis pretiosa*).

39. *Totocalca.*

*a.* tukulala, tukula?la.

*b.* None.

*c.* Size of *chachalaca* (No. 4); height of a hen, long legs; no tail; brown plumage. According to another informant, a large bird, with yellow bill, black tail, green body, red feet.

*d.* tu-tu-ku-la-la-la.

*e.* Current throughout the year, near small streams.

*f.* Small fish, worms.

*g.* Traps, shotgun.

*h.* Edible; "looks like chicken, but fish-flavored." Served smoked, in stew (*huatape*), or with *mole* sauce.

*i.* Sings only at dawn and dusk; its cry presages rain.

*j.* Heron or bittern (?).

40. *Vaquero.*

*a.* tok?ní?.

*b.* None.

*c.* Size of *zopilote* (No. 41); looks like *aguililla* (No. 1); chocolate-colored plumage.

*d.* oooook ("like a cattle call"; *como gritan los raqueros*).

*e.* Cry heard in *monte.* Bird arrives with the heat, usually in June; departs in August; by September none remains.

*f.* Poultry.

*g.* Shotgun.

*h.* None; bird of prey.

*j.* Hawk of some kind (?).

41. *Zopilote.*

*a.* čun.

*c.* Size of large hen; but greater wingspread. Black plumage.

*d.* None.

*e.* Current throughout the year.

*f.* Eats carrion.

*g.* Shotgun.

*h.* Sometimes hunted; medicinal. Broth and meat eaten as cure for rabies; or the fresh blood mixed with "sherry," and drunk.

*j.* Black vulture (*Coragyps atratus*).

42. *Zopilote rey.*

*a.* šakλ.

*b.* None.

*c.* Slightly larger than the *zopilote* (No. 41); has red head, bill, and feet; brown plumage.

*d.* None.

*e.* Current throughout the year; frequents same places as *zopilote.* Not numerous.

*f.* Devours eyes of dead animals; does not eat putrid meat.

*g.* Not hunted.

*h.* None.

*i.* Considered the king of *zopilotes* (cf. Clavijero 1:90).

*j.* King vulture (*Sarcoramphus papa*).

# WORKS CITED

The citations below include both manuscript and published materials.

Documents in the Archivo General de la Nación (cited as: AGN) are listed under that heading. Within each major subdivision of the archive, documents, or groups of documents, are arranged in chronological order. To facilitate reference in the text, they have been assigned consecutive numbers.

The several sixteenth-century *relaciones geográficas* appear under the latter heading, whether they have been published or are in manuscript form. They are listed in alphabetical order, by pueblo, with the spelling of the latter following that of the 1930 Federal census.

Upon occasion, the large collection of ancient maps made by Orozco y Berra is cited in the text; below, it is listed as the Colección Orozco y Berra.


Acosta Saignes, Miguel.

1945. Los pochteca. Acta antropológica, vol. 1, No. 1. México, D. F.

Aguilar, Francisco de.

1938. Historia de la Nueva España; copiada y revisada por Alfonso Teja Zabre. Ediciones Botas. [Ciudad de] México.

Aguilera, Jose G.

1901. Distribución geográfica y geológica de los criaderos minerales de la República mexicana. Ofic. tip. de la Secretaría de fomento. [Ciudad de] México.

Aguirre Beltran, Gonzalo.

1946. La población negra de México, 1519–1810; estudio etnohistórico. Ediciones fuente cultural. México, D. F.

Alatorre, Ignacio R.

1867. Acontecimientos del estado de Veracruz. Jalapa, Ver.

Alva Ixtlilxochitl, Fernando de.

1891–92. Obras históricas de don Fernando de Alva Ixtlilxochitl, publicadas y anotadas por Alfredo Chavero . . . Ofic. tip. de la Secretaría de fomento. 2 vols. [Ciudad de] México. [Cited as: Ixtlilxochitl.]

Anales de Tlatelolco y Codice de Tlatelolco.

1948. Versión preparada y anotada por Heinrich Berlin, con un resumen de los anales y una interpretación del códice por Robert H. Barlow. Antigua librería Robredo de José Porrúa e hijos. México, D. F.

Anderson, Richmond K., and others.

1948. Nutrition appraisals in Mexico. Amer. Journ. Public Health, vol. 38, pp. 1126–1135.

Anonymous.

1866. Agencia de fomento en Veracruz. Poblaciones, accidentes hidrográficos y otras noticias del departamento del mismo nombre. Boletín de la sociedad mexicana de geografía y estadística, vol. 12, pp. 89–112. [Ciudad de] México.

Archivo General de la Nacion. [Cited as: AGN.]

Ramo de Tierras.

1. 1572. Chapultepec *vs.* Misantla. Vol. 33, leg. 11. (No. 8 in volume).
2. 1575–1716. Ixtepec y Tapayula *vs.* Atlequizayan y otros. Vol. 337, leg. 183 (No. 1 in volume).
3. 1585. Religiosos en Zempoala. Vol. 2769.
4. 1607–1738. Chumatlán *vs.* Zozocolco. Vol. 101, leg. 48 (No. 7 in volume).
5. 1738. Zozocolco *vs.* Jonotla. Vol. 583, leg. 315 (No. 1 in volume).
6. 1766. Establecimiento de los indios Panzacoleños del pueblo de San Carlos. Vol. 911, leg. 466 (No. 2 in volume).
7. 1779. Quejas de Misantla. Vol. 1048, leg. 523 (No. 3 in volume).
8. 1792. Quejas de Coatzintla. Vol. 1225, leg. 606 (No. 17 in volume).

Ramo de Indios.

9. 1591. Disposición sobre el gobernador indio de Jonotla. Vol. 5, exp. 318.
10. 1592. Pesquerías en Hueytlalpan, Amixtlán y Jojupango. Vol. 6, exp. 330.
11. 1592–94. Congregaciones en Chicontepec. Vol. 6, exp. 711, 712, 718, 753, 772, 903.
12. 1593. Disposiciones sobre los indios de Atzalan. Vol. 6, exp. 772.
13. 1594. Disposición sobre los gobernadores indios de Chila. Vol. 6, exp. 910.
14. 1596. Disposiciones sobre los negros en Zacatlán. Vol. 104, exp. 18.
15. 1598. Congregaciones en Hueytlalpan. Vol. 6, exp. 920, 931.
16. 1598. Congregaciones en Jalapa. Vol. 6, exp. 922.
17. N. D. (*ca.* end of sixteenth century). Pesquerías en Pahuatlán y Jicotepec. Vol. 2, exp. 756.

Reales Cedulas.

18. 1693–95. Chicontepec. Vol. 4.

Ordenanzas.

19. 1627. Mandamiento sobre el trato de los indios de la Nueva España. Vol. 47, f. 47.
20. 1627. Orden para que se cumpla el mandamiento anterior en el partido de Zacatlán. Vol. 103, f. 109.

ASCHMANN, HERMAN P.
1946. Totonaco phonemes. Int. Journ. Amer. Ling., vol. 12, pp. 34–43.

ATLAS CLIMATOLOGICO. *See* MEXICO.

ATLAS GEOGRAFICO. *See* MEXICO.

BAILEY, L. H., EDITOR.
1943. The standard cyclopedia of horticulture. The Macmillan Co. 3 vols. (pagination continuous). New York.

BARLOW, R. H.
1945. La crónica "X." Revista mexicana de estudios antropológicos, vol. 7, pp. 65–85.
1947 a. Conquistas de los antiguos mexicanos. Journ. Soc. Amér., n. s., vol. 36, pp. 215–222.
1947 b. The codex of Tonayan. Carnegie Inst. Washington, Div. Hist. Res. Notes on Middle Amercian Archaeology and Ethnology, No. 84.
1947 c [1948]. Apuntes para la historia antigua de Guerrero. *In* El occidente de México, pp. 181–190. Cuarta reunión de mesa redonda. Sociedad mexicana de antropología. México, D. F.
1947 d. [Review of] Códice Chimalpopoca. Anales de Cuauhtitlán y Leyenda de los soles. Hispanic Amer. Hist. Rev., vol. 27, pp. 520–526.
1948. Cuauhtlahtoa: el apogeo de Tlatelolco. Tlatelolco a través de los tiempos, vol. 10, pp. 14–42. México, D. F.

BAUSA, JOSE M.
1857. Bosquejo geográfico y estadístico del partido de Papantla. Boletín de la sociedad mexicana de geografía y estadística, vol. 5, pp. 374–426. [Ciudad de] México.

BENEDICT, FRANCIS G., and STEGGERDA, MORRIS.
1936. The food of the present-day Maya Indians of Yucatan. Carnegie Inst. Washington. Contr. Amer. Archael., vol. 3, pp. 155–188.

BERISTAIN Y SOUZA, JOSE MARIANO.
1883. Biblioteca hispano americana setentrional, por el doctor d. José Mariano Beristain y Souza. 2 ed., publícala el presbítero br. Fortino Hipólito Vera . . . Tip. del Colegio católico. 3 vols. Amecameca.

BEVAN, BERNARD.
n. d. [1938]. The Chinantec; report on the central and south-eastern Chinantec region. Instituto panamericano de geografía e historia. Vol. 1. [México, D. F.]

BOBAN, EUGENE.
1891. Documents pour servir à l'histoire du Mexique; catalogue raisónné de la collection de m. E. Eugène Goupil (ancienne collection J. M. A. Aubin) . . . avec une introduction de m. E. Eugène Goupil et une lettre-préface de m. Auguste Génin . . . Ernest Leroux, ed. 2 vols. and atlas. Paris.

BRUMAN, HENRY.
1948. The culture history of Mexican vanilla. Hispanic Amer. Hist. Rev., vol. 28, pp. 360–376.

BURGOA, FRANCISCO DE.
1934. Geográfica descripción. Publicaciones del Archivo general de la nación, vol. 26. Secretaría de gobernación, Talleres gráficos de la nación. [Ciudad de] México.

BUSTAMANTE, CARLOS MARIA DE.
1926. Cuadro histórico de la revolución mexicana, comenzada en 15 de septiembre de 1810 por el ciudadano Miguel Hidalgo y Costilla . . . 2 ed. corr. y muy aum. por el mismo autor. Talleres linotipográficos "Soria." 5 vols. México, D. F.

CALENDARIO DE MARIANO GALVAN RIVERA.
1949. (Para el año de 1950). Antigua librería de Murgía. México, D. F.

CABBERA STAMPA, MANUEL.
1945. Algunos aspectos de la *Historia de Tlaxcala*, de Diego Muñoz Camargo. *In* Díaz-Thomé, pp. 91–142.

CARTA GENERAL. *See* VERACRUZ.

CARTER, GEORGE F.
1945. Plant geography and culture history in the American Southwest. Viking Fund Publ. in Anthrop., No. 5.

CASAS, BARTOLOME DE LAS.
1909. Apologética historia de las Indias. Nueva biblioteca de autores españoles, 13. Historiadores de Indias, vol. 1. Madrid.

CASO, ALFONSO.
1942. Definición y extensión del complejo "olmeca." *In* Mayas y olmecas, pp. 43–46.

CENSO. *See* MEXICO.

CENSUS. *See* MEXICO.

CHIMALPAHIN QUAUHTLEHUANITZIN, DOMINGO FRANCISCO DE SAN ANTON MUÑON.
1889. Annales de Domingo Francisco de San Anton Muñon Chimalpahin Quauhtlehuanitzin, sixième et septième relations (1258–1612), pub. et tr. sur le manuscrit original par Rémi Siméon. Maisonneuve et C. Leclerc. Paris.

CLAVIJERO, FRANCISCO J.
1944. Historia antigua de México. Traducción del italiano de J. Joaquín de Mora. Editorial Delfín. México, D. F.

CODEX TELLERIANO-REMENSIS.
*In* Kingsborough, vol. 5, pp. 129–158.

CODICE CHIMALPOPOCA.
1945. Anales de Cuauhtitlán y Leyenda de los soles. Traducción directa del náhuatl por el licenciado . . . Primo Feliciano Velázquez. Universidad nacional autónoma de México, Instituto de historia. Imprenta universitaria. México, D. F.

CODICE EN CRUZ. *See* DIBBLE.

Codice Franciscano.
1941. Nueva colección de documentos para la historia de México [vol. 2]. Editorial Salvador Chávez Hayhoe. México, D. F.

Codice Ramirez.
1944. Relación del origen de los indios que habitan esta Nueva España, según sus historias. Editorial leyenda, S. A. [Ciudad de] México.

Coleccion de Documentos Ineditos.
1864–84. Colleción de documentos inéditos relativos al descubrimiento, conquista y colonización de las posesiones españolas . . . sacadas . . . del Real archivo de Indias, bajo la dirección de los sres. D. Joaquín F. Pacheco y D. Francisco de Cárdenas . . . y D. Luis Torres de Mendoza. Imprenta de Manuel B. de Quirós. 42 vols. Madrid.

Coleccion de Mendoza.
*In* Kingsborough, vol. 5, pp. 39–126.

Coleccion Orozco y Berra de Mapas Antiguos.
Housed in the Dirección de geografía, meteorología e hidrología, Secretaría de agricurtura y fomento, México, D. F.

Cook, Sherburne F., and Simpson, Lesley Byrd.
1948. The population of central Mexico in the sixteenth century. Ibero-Americana, 31. Berkeley. [Cited as: CS.]

Corona, Nicolas.
1925. Catecismo breve para instrucción de los Totonacas. Tip. "Cristo Rey." Papantla, Ver.

Cortes, Hernan. *See both* Gayangos and Lorenzana.

Cortes, Martin.
Carta de D. Martín Cortés, segundo marquée del Valle, al rey D. Felipe II . . . *In* Colección de documentos inéditos vol. 4, pp. 440–462.

Covarrubias, Miguel.
1942. Origen y desarrollo del estillo artístico "olmeca." *In* Mayas y olmecas, pp. 46–49.
1947. Mexico south: The isthmus of Tehuantepec. Alfred A. Knopf. New York.

Crane, Julian C.
1947. Kenaf—fiber-plant rival of jute. Economic Botany, vol. 1, pp. 334–350.

Cravioto B., Rene, and others.
1945. Composition of typical Mexican foods. Journ. Nutrition, vol. 29, pp. 317–329.

Cravioto, Rene, and Miranda, Francisco de P.
1947. Resultado de 281 análisis de alimentos mexicanos llevados a cabo en el Instituto nacional de nutriología. Secretaría de salubridad y asistencia, Instituto nacional de nutriología. Publicaciones del Instituto nacional de nutriología. México, D. F.

Cuevas, Mariano, Comp.
1914. Documentos inéditos del siglo XVI para la historia de México, colegidos y anotados por el p. Mariano Cuevas, S. J.; publicación hecha bajo la dirección de Genaro García, por el Museo nacional de arqueología, historia y etnologia. Talleres del Museo nacional de arqueología, historia y etnología. [Ciudad de] México.

Cuevas, Mariano.
1942. Historia de la iglesia en México. Ediciones Cervantes. 5 vols. México, D. F.

Cuevas, Perfecto.
1900. Cartilla de la doctrina cristiana en totonaco. Oraciones para la devoción del Santísimo rosario y varias oraciones traducidas al castellano por el señor Perfecto Cuevas. Tip. de "La misericordia cristiana." Puebla.

Cummings, Richard Osborn.
1941. The American and his food; a history of food habits in the United States. Univ. Chicago Press. Chicago.

Diaz del Castillo, Bernal.
1939. Historia verdadera de la conquista de la Nueva España; introducción y notas por Joaquín Ramírez Cabañas . . . Editorial Pedro Robredo. 3 vols. México, D. F.

Diaz-Thome, Hugo, and Others.
1945. Estudios de historiografía de la Nueva España. El Colegio de México. México, D. F.

Dibble, Charles E.
1942. Códice en Cruz. Talleres linotipográficos Numancia. 1 vol. and atlas. México, D. F.

Doctrinas de Indios a Cargo de Agustinos.
Memorias de los pueblos que doctrinaban los religiosos de la Orden de San Augustín en la *Diócesis de Tlaxcala*, hechas por los priores de los monasterios de la dicha Orden en cada pueblo. *In* Paso y Troncoso, vol. 5, pp. 273–286. [Presumably dates from 1571. Cited as: Doctrinas.]

Doctrinas de Indios a Cargo de Clerigos.
Memorias y relaciones hechas por los curas y vicarios de los pueblos de indios de la *Diócesis de Tlaxcala*, de orden del obispo D. FERNANDO DE VILLAGOMEZ, por encargo del VIRREY de la *Nueva España*. 1569. *In* Paso y Troncoso, vol. 5, pp. 202–272. [Cited as: Doctrinas.]

Dominguez, Francisco.
1837. Catecismo de la doctrina cristiana puesto en el idioma totonaco de la cierra baja de Naolingo, distinto del de la cierra alta de Papantla. Reimpreso en la Imprenta del Hospital de San Pedro. Puebla.

D. P. E. P.
1945. Noticias de la Nueva España. Biblioteca aportación histórica. Editor Vargas Rea. [Ciudad de] México.

Duran, Diego.
1867–80. Historia de las Indias de Neuva-España y islas de tierra firme. Imprenta de J. M. Andrade y F. Escalante. 2 vols. and atlas. [Ciudad de] México.

Dusolier, Wilfrido.
1945. La cerámica arqueológica de El Tajín. Anales del Museo nacional de arqueología, historia y etnografía, Quinta época, vol. 3, pp. 1–45. Secretaría de educatión pública. México, D. F.

Emerson, R. A.
n. d. A preliminary survey of the milpa system of maize culture as practised by the Máya Indians of the northern part of the Yucatan peninsula. [Mimeographed.] [Cornell Univ. (?), Ithaca, N. Y.].

Epistolario de Nueva España. *See* Paso y Troncoso. (Cited as: Epistolario.)

Fernandez de Oviedo y Valdes, Gonzalo.
1851–55. Historia general y natural de las indias, islas y tierra-firme del mar océano por el capitán Gonzalo Fernández de Oviedo y Valdés, primer cronista del Nuevo mundo. Impr. de la Real academia de la historia. 4 vols. Madrid. [Cited as: Oviedo.]

Flores D., Jorge.
1938. La revolución de Olarte en Papantla (1836–1838). Imprenta mundial. [Ciudad de] México.

Foster, George M.
1940. Notes on the Popoluca of Veracruz. Instituto panamericano de geografía e historia, No. 51. México, D. F.
1942 a. Indigenous apiculture among the Popoluca of Veracruz. Amer. Anthrop., vol. 44, pp. 538–542.
1942 b. A primitive Mexican economy. Monogr. Amer. Ethnol. Soc., No. 5. J. J. Augustin. New York.
1948. Empire's children: the people of Tzintzuntzan. Inst. Social Anthrop. Publ. No. 6.

Fuente, Julio de la.
1949. Yalálag, una villa zapoteca serrana. Museo nacional de antropología, Serie científica, No. 1. Secretaría de educación pública, Instituto nacional de antropología e historia. [Imprenta Nuevo Mundo.] Mexico, D. F.

Garcia Icazbalceta, Joaquin, Editor.
1858–66. Colección de documentos para la historia de México. Antigua librería, J. M. Andrade. 2 vols. [Ciudad de] México.

Garcia Payon, Jose.
1943. Interpretación cultural de la zona arqueológica de El Tajín. Universidad autónoma de México. Imprenta universitaria. [Ciudad de] Mexico.
1947. Sinopsis de algunos problemas arqueológicos del Totonacapan. El México antiguo, vol. 6, pp. 301–332.
1948 [sic] [1949 a] Arqueología en Zempoala. Uni-Ver, vol. 1, pp. 11–19. Jalapa, Ver.
1949 b. Zempoala. Uni-Ver, vol. 1, pp. 449–476. Jalapa, Ver.
1949 c. Arqueología de Zempoala. Uni-Ver, vol. 1, pp. 636–656. Jalapa, Ver.

Garcia Pimentel, Luis, Editor.
1897. Descripción del arzobispado de México hecha en 1570 y otros documentos. José Joaquín Terrazas e hijas imps. [Ciudad de] México.
1904. Relación de los obispados de Tlaxcala, Michoacán, Oaxaca y otros lugares, en el siglo XVI. Documentos históricos de Méjico, vol. 2. Casa del editor, [Ciudad de] México; París; Madrid.

Gayangos y Arce, Pascual de, Comp.
1866. Cartas y relaciones de Hernán Cortés al Emperador Carlos V. A. Chaix y Cia., Imprenta central de los ferro-carriles. París.

Gazeta de Mexico.
1785. Vol. 1. [Ciudad de] México.

Gillin, John.
1945. Moche, a Peruvian coastal community. Inst. Social Anthrop. Publ. No. 3.

Gomara, Francisco Lopez de. See Lopez de Gomara.

Gonzalez Bonilla, Luis Arturo.
1942. Los totonacos. Revista mexicana de sociología, vol. 4, pp. 81–101.

Harris, Robert S.
1946. The nutrition problem of Mexico. Journ. Amer. Dietetic Assoc., vol. 22, pp. 974–976.

Hermann, F. J.
n. d. Economic plants of interest to the Americas. Rotenone. [Mimeographed.] U. S. Dept. Agric., Off. Foreign Agric. Relations.

Herrera y Tordesillas, Antonio de.
1934. Historia general de los hechos de los castellanos en las islas y tierrafirme del mar océano . . . publicada por acuerdo de la Academia de la historia. [Tipografía de archivos.] Madrid.

Historia de los Mexicanos por sus Pinturas.
n. d. Nueva colección de documentos para la historia de México [vol. 3], pp. 207–289. Varias relaciones antiguas. Editorial Salvador Chávez Hayhoe. México, D. F.

Historia tolteca-chichimeca.
1947. Anales de Quauhtinchan. Prólogo de P. Kirchhoff. Antigua librería Robredo de José Porrúa e hijos. México, D. F.

Hutchinson, J. B., Silow, R. A., and Stephens, S. G.
1947. The evolution of Gossypium and the differentiation of the cultivated cottons. Empire Cotton Growing Corp. Oxford University Press. London, New York, and Toronto.

Icaza, Francisco A. de
1923. Conquistadores y pobladores de Nueva España; diccionario autobiográfico sacado de los textos originales. Imprenta de "El Adelantado de Segovia." 2 vols. Madrid.

Informacion Recibida en la Real Audiencia de Mexico . . .
*In* Epistolario de Nueva España, vol. 13, pp. 3–46. [Cited as: Epistolario.]

Ixtlilxochitl. *See* Alva Ixtlilxochitl.

JIMENEZ MORENO, WIGBERTO.
1942 a. Relación entre los olmecas, los toltecas y los mayas, según las tradiciones. *In* Mayas y olmecas, pp. 19–23.
1942 b. El enigma de los olmecas. Sobretiro de Cuadernos americanos, No. 5, pp. 113–145.

JOHNSON, FREDERICK.
1948. The Caribbean lowland tribes: the Talamanca division. *In* Steward, 4: 231–251.

KEMPTON. J. H.
n. d. Preliminary report of the agricultural survey of Yucatan of 1935. [Mimeographed.] [Carnegie Institution of Washington (?).]

KIDDER, A. V.
1940. Archaeological problems of the highland Maya. *In* The Maya and their neighbors, pp. 117–125.

KINGSBOROUGH, EDWARD KING.
1830–48. Antiquities of Mexico. 9 vols. A. Aglio. London.

KIRCHHOFF, PAUL.
1940. Los pueblos de la historia tolteca-chichimeca: sus migraciones y parentesco. Revista mexicana de estudios antropológicos, vol. 4, pp. 77–104.
1947. *In* Historia tolteca-chichimeca, pp. xix–lxiv.

KRICKEBERG, WALTER.
1933. Los totonaca; contribución a la etnografía histórica de la América central . . . Traducción del alemán por Porfirio Aguirre . . . Secretaría de educación pública, Talleres gráficos del Museo nacional de arqueología, historia y etnografía. [Ciudad de] México.

KUBLER, GEORGE.
1942. Population movements in Mexico 1520–1600. Hispanic Amer. Hist. Rev., vol. 22, pp. 606–643.

LANDA, DIEGO DE.
1938. Relación de las cosas de Yucatán . . . introducción y notas por Héctor Pérez Martínez. 7 ed., con un apéndice en el cual se publican por primera vez varios documentos importantes y cartas del autor. Editorial Pedro Robredo. México, D. F.

LEDUC, ALBERTO, LARA Y PARDO, LUIS, and ROUMAGNAC, CARLOS.
1910. Diccionario de geografía, historia y biografía mexicanas. Librería de la Vda. de C. Bouret. París; México.

LEE, ALFRED R., and SHEPPARD, HAYNES.
1915. Duck raising. U. S. Dept. Agric., Farmers' Bull. No. 697.

LEGISLACION MEXICANA.
1876. Colección completa de las disposiciones legislativas expendidas desde la independencia de la república. M. Dublán y J. M. Lozano, eds. Imprenta del comercio. 2 vols. [Ciudad de] México.

LEON PINELO, ANTONIO RODRIGUEZ DE.
1629. Epítome de la biblioteca oriental i occidental, naútica i geográfica. I. González. Madrid.

LERDO DE TEJADA, MIGUEL M.
1940. Apuntes históricos de la heroica ciudad de Veracruz. Reeditados por la oficina de máquinas de la Secretaría de educación pública. 2 vols. México, D. F.

LINNE, S.
1939. Blow-guns in ancient Mexico. Ethnos, vol. 4, pp. 56–61.
[1942]. El mapa más antiguo del valle de México. Vigésimo séptimo congreso internacional de americanistas, 1939, vol. 1, pp. 492–500. Secretaría de educación pública, Instituto nacional de antropología e historia. [Ciudad de México.]

LISTA DE LOS PUEBLOS DE INDIOS . . . ENCOMENDADOS EN PERSONAS PARTICULARES . . .
*In* García Pimental, 1904, pp. 153–188.

LOMBARDO TOLEDANO, VICENTE.
1931. Geografía de las lenguas de la sierra de Puebla, con algunas observaciones sobre sue antiguos y sus actuales pobladores. Universidad nacional de México. México, D.F.

LOPEZ DE GOMARA, FRANCISCO.
1943. Historia de la conquista de México; con una introducción y notas por Joaquín Ramírez Cabañas. Editorial Pedro Robredo. 2 vols. México, D. F. [Cited as: Gómara.]

LOPEZ DE VELASCO, JUAN.
1894. Geografía y descripción universal de las Indias, recopilada por el cosmógrafo-cronista Juan López de Velasco, desde el año de 1571 al de 1574, publicada por primera vez en el Boletín de la Sociedad geográfica de Madrid, con adiciones e ilustraciones, por don Justo Zaragoza. Establecimiento tipográfico de Fortanet. Madrid.

LORENZANA, FRANCISCO ANTONIO.
1770. Historia de Nueva España, escrita por su esclarecido conquistador, Hernán Cortés, aumentada con otros documentos, y notas, por el ilustríssimo señor don Francisco Antonio Lorenzana, arzobispo de México. [Ciudad de] México.

LOTHROP, SAMUEL K.
1927. The potters of Guatajiagua, Salvador. Indian Notes, Mus. Amer. Indian, Heye Fundation, vol. 4, pp. 109–118.

MARTINEZ, MAXIMINO.
1928. Las plantas más útiles que existen en la República mexicana. Talleres linotipográficos de H. Barrales Sucr. México, D. F.
1937. Catálogo de nombres vulgares y científicos de plantas mexicanas. Ediciones Botas, Imprenta mexicana. México, D. F.

MARTIR DE ANGLERIA, PEDRO.
1944. Décadas del nuevo mundo. Vertidas del latín . . . por . . . Joaquín Torres Asensio. Editorial Bajel. Buenos Aires.

MATRICULA DE TRIBUTOS.
*In* Colección de Mendoza (Kingsborough), vol. 5, pp. 54–126.

MAYA AND THEIR NEIGHBORS, THE.
1940. D. Appleton-Century Co. New York, London.

MAYAS Y OLMECAS.
1942. Segunda reunión de mesa redonda sobre problemas antropológicos de México y Centro América. Sociedad mexicana de antropologia. Tuxtla Gutiérrez, Chiapas.

MCBRYDE, FELIX WEBSTER.
[1947.] Cultural and historical geography of southwest Guatemala. Inst. Social Anthrop. Publ. No. 4.

MCQUOWN, NORMAN.
1942. Una posible síntesis lingüística Macro-mayance. *In* Mayas y olmecas, pp. 37–38.

MEADE, JOAQUIN.
1942. La Huasteca. Publicaciones históricas, Editorial Cossio. México, D. F.

MELGAREJO VIVANCO, JOSE LUIS.
1943. Totonacapan. Talleres gráficos del gobierno del estado. Xalapa, Ver.
n. d. La provincia de Tzicoac. Editiv. No. 6. Jalapa, Ver.

MENDIETA, GERONIMO DE.
1945. Historia eclesiástica indiana. Editorial Salvador Chávez Hayhoe. 4 vols. México, D. F.

MENDIETA Y NUÑEZ, LUCIO.
1923. El problema agrario de México, desde su origen hasta la época actual. México, D. F.

MEXICO.
1939. Atlas climatológico de México. Secretaría de agricultura y fomento. Dirección de geografía, meteorología e hidrología, Servício meteorológico mexicano. México, D. F.
1943. Atlas geográfico de la República mexicana. Escala, 1 : 500,000. Secretaría de agricultura y fomento, Dirección de geografía, meteorología e hidrología. México, D. F.
1928. Censo general de habitantes, 1921. Estado de Veracruz. Departamento de la estadística nacional. México, D. F.
1904. Censo general de la República mexicana, 1900. Secretaría de fomento, colonización e industria. México, D. F.
1936. Quinto censo de población, 1930. Estado de Veracruz. Secretaría de la economía nacional, Dirección general de estadistica. México, D. F.
1943. Sexto censo de población, 1940. Estado de Veracruz. Secretaría de la economía nacional, Dirección general de estadística. México, D. F.
1940. El petróleo de México. Gobierno de México. México, D. F.

MILLARES CARLO, A., AND MANTECON, J. I.
1945–46. Indice y extractos de los protocolos del Archivo de notarías de México, D. F. El Colgeio de México. Vols. 1, 2. México, D. F.

MORLEY, SYLVANUS GRISWOLD.
1947. The ancient Maya. Stanford Univ. Press. Stanford Univ., Calif.

MOTA Y ESCOBAR, ALONSO DE LA.
1945. Memoriales del obispo de Tlaxcala, fray Alonso de la Mota y Escobar. Anales del Instituto nacional de antropología e historia, 1939–40, vol. 1, pp. 191–306. Secretaría de educación pública. México, D. F.

MOTOLINIA, TORIBIO DE.
1903. Memoriales de Toribio de Motolinía, manuscrito de la colección del señor don Joaquín García Icazbalceta ; publícalo por primera vez su hijo Luis García Pimentel. Ciudad de Méjico, en casa del editor L. García Pimentel; París; Madrid.

MUNSELL, HAZEL E., AND OTHERS.
1949. Composition of food plants of Central America. I. Honduras. Food Research, vol. 14, pp. 144–164.

MUÑOZ CAMARGO, DIEGO.
1892. Historia de Tlaxcala. Publicada y anotada por Alfredo Chavero. Ofic. tip. de la Secretaría de fomento. [Ciudad de] México.

MURDOCK, GEORGE P., AND OTHERS.
1945. Outline of cultural materials. Yale Anthrop. Studies, vol. 2. Yale Univ. Press. New Haven, London.

NAZAREO DE XALTOCAN, PABLO.
Carta al rey don Felipe II, de don Pablo Nazareo de Xaltocan . . . 1566. *In* Epistolario de Nueva España, vol. 10, pp. 109–129.

NOTICIAS VARIAS DE NUEVA GALICIA, INTENDENCIA DE GUADALAJARA.
1878. Tip. de Banda, ex-convento de Santa María de Gracia. Guadalajara, Jal.

NUEVA NOTICIA DEL PAIS QUE LOS ESPAÑOLES ENCONTRARON EN EL AÑO DE 1521, LLAMADO YUCATAN.
1940. Imprenta universitaria. México, D. F.

NUÑEZ Y DOMINGUEZ, JOSE DE J.
1931. Gestas del solar nativo; relatos históricos del estado de Veracruz. [Ciudad de?] Veracruz.

OLIVO LARA, MARGARITA.
1931. Biografías de veracruzanos distinguidos. Imp. del Museo nacional de arqueología, historia y etnografía. México, D. F.

OLMOS, ANDRES DE.
1912. Proceso seguido por Fray Andrés de Olmos en contra del cacique de Matlatlán. Procesos de indios idólatras y hechiceros. Publicaciones del Archivo general de la nación, vol. 3, pp. 205–215. Secretaría de relaciones exteriores. México, D. F.

OROZCO Y BERRA, MANUEL.
1864. Geografía de las lenguas y carta etnográfica; precedidas de un ensayo de clasificación de las mismas lenguas y de apuntes para las inmigraciones de las tribus. Imprenta de J. M. Andrade y F. Escalante. [Ciudad de] México.

Ots Capdequi, J. M.
1946. El estado español en las Indias. Fondo de cultura económica. [Ciudad de] México.

Oviedo, Gonzalo Fernandez de. *See* Fernandez de Oviedo.

Parsons, Elsie Clews.
1936. Mitla, town of the souls, and other Zapoteco-speaking pueblos of Oaxaca, Mexico. Univ. Chicago Press. Chicago.

Paso y Troncoso, Francisco del, Comp.
1905. Papeles de Nueva España. Segunda serie, Geografía y estadística. Tip. sucesores de Rivadeneyra. Vols. 1, 3–6 [vol. 1, cited as: Suma; vols. 3–6, as Paso y Troncoso]. Madrid.
1939–42. Epistolario de Nueva España, 1505–1818; recopilado por Francisco del Paso y Troncoso. Biblioteca histórica mexicana de obras inéditas. Segunda serie. Antigua librería Robredo de José Porrúa e hijos. 16 vols. México, D. F. [Cited as: Epistolario.]

Patiño, Celestino.
1907. Vocabulario totonaco, arreglado por Celestino Patiño. Ofic. tip. del Gobierno del stado. Xalapa-Enríquez, Ver.

Peñafiel, Antonio.
1885. Nombres geográficos de México; catálogo alfabético de los nombres de lugar pertenecientes al indioma "Nahuatl"; estudio jeroglífico de la Matrícula de tributos del Códice mendocino, por el Sr. Antonio Peñafiel. Ofic. tip. de la Secretaría de fomento. [Ciudad de] México.

Pereyra, Carlos.
1920-26. Historia de América española. Editorial "Saturnino Calleja," S. A. 7 vols. Madrid.

Petroleo de Mexico, el. *See* Mexico.

Ponce, Alonso.
1873. Relación breve y verdadera de algunas cosas de las muchas que sucedieron al padre fray Alonso Ponce en las provincias de la Nueva España. Escrita por dos religiosos, sus compañeros. 2 vols. Madrid.

Quevedo, Miguel Angel de.
1916. Algunas consideraciones sobre nuestro problema agrario. Imprenta victoria. México, D. F.

[Quinto] censo de poblacion. *See* Mexico.

Radin, Paul.
1920. The sources and authenticity of the history of the ancient Mexicans. Univ. Calif. Publ. Amer. archaeol. and ethnol., vol. 17, pp. 1–150. Berkeley.

Ramirez, Santiago.
1884. Noticia histórica de la riqueza minera de México. Ofic. tip. de la Secretaría de fomento. [Ciudad de] México.

Redfield, Robert.
1930. Tepoztlán, a Mexican village; a study of folk life. Univ. Chicago Press. Chicago.

Relacion del distrito y pueblos del Obispado de Tlaxcala.
*In* Epistolario de Nueva España, vol. 14, pp. 70–101.

Relacion de los pueblos de indios de Nueva España que estan encomendados en personas particulares descontando el diezmo que se paga.
*In* Epistolario de Nueva España, vol. 9, pp. 2–49.

Relaciones estadisticas de Nueva España de principios del siglo xix.
1944. Archivo histórico de hacienda, vol. 3. Secretaría de hacienda y crédito público, Dirección de estudios financieros. [Offset.] [Ciudad de] México.

Relaciones geograficas del siglo xvi.

Ameca.
Discripcion hecha por el Ilustre señor Antonio de Leyva, alcalde mayor por S. M. del pueblo de Ameca, año de 1579. *In* Noticias varias de Nueva Galicia, pp. 233–282.

Ajuchitlan.
Relaçion y memoria hecha por la ystruçion de su Magestad, en lo tocante a la descripçion de las yndias, por Diego Garçes, corregidor de Asuchitlan. 1579. MS. copy in Museo nacional de México.

Huejutla.
Relacion de Uexutla. [Hecha . . . por el corregidor Cristóbal Pérez Puebla.] 1580. *In* Paso y Troncoso, vol. 6, pp. 183–192.

Hueytlalpan.
Descripcion del pueblo de *Gueytlalpa* y su jurisdiccion, [hecha por] Juan de Carrion. 1581. MS. copy in Museo nacional de México.

Jalapa.
Relaçión de Xalapa de la Veracruz . . . por . . . Constantino Brauo de Lagunas. 1580. *In* Paso y Troncoso, vol. 5, pp. 99–123.

Jojupango.
Descripcion de la cabescera de *jujupango*, jurisdiccion de *Gueytlalpa* [hecha por Juan de Carrión]. 1581. MS. copy in Museo nacional de México.

Jonotla y Tetela.
Descripcion de la tierra del corregimiento de *Xonotla* y *Tetela*, ffecha por el Yllustre Señor Jhoan Gonçales . . . 1581. *In* Paso y Troncoso, vol. 5, pp. 124–173.

"Matlatlan" y Chila.
Descripcion de los pueblos de *matlatlan* y *chila*, de la jurisdiccion de Gueytlalpa [hecha por Juan de Carrión]. 1581. MS. copy in Museo nacional de México.

Metztitlan.
Relacion de la provincia de Meztitlan [hecha por Gabriel de Chávez]. 1579. MS. copy in Museo nacional de México.

Misantla.
[Relacion de] Miçantla [hecha por Diego Pérez de Arteaga]. 1579. MS. copy in Museo nacional de México.

Relaciones geograficas del siglo xvi—continued

Papantla.

Descripcion del pueblo é cabecera de *Papantla* de la jurisdiccion de *Güeytlalpa* [hecha por Juan de Carrión]. 1581. MS. copy in Museo nacional de México.

Tetela. *See* Jonotla y Tetela.

Veracruz.

[Relación de Veracruz, hecha por Alvaro Patiño]. 1580. MS. copy in Museo nacional de México.

Zacatlan.

Discrepcion del pueblo e cabesera de *çacatlan*, jurisdiccion del pueblo de *gueytlalpa* [hecha por Juan de Carrión]. 1581. MS. copy in Museo nacional de México.

Ricard, Robert.

1933. La "conquête spirituelle" du Mexique. Essai sur l'apostolat et les méthodes missionnaires des ordres mendiants en Nouvelle-Espagne de 1523–24 à 1572. Institut d'ethnologie. Paris.

Rivera Cambas, Manuel.

1869–71. Historia antigua y moderna de Jalapa y de las revoluciones de Veracruz. Imprenta de I. Cumplido. 5 vols. [Ciudad de] México.

Rouse, Irving.

1948. The Arawak. *In* Steward, 4: 507–565.

Sahagun, Bernardino de.

1938. Historia general de las cosas de Nueva España. Editorial Pedro Robredo. 5 vols. México, D. F.

Sauer, Carl.

1934. The distribution of aboriginal tribes and languages in northwestern Mexico. Ibero-Americana, 5. Berkeley.

1948. Colima of New Spain in the sixteenth century. Ibero-Americana, 29. Berkeley.

Sentencias que dieron el visitador Diego Ramirez y su acompañado.

*In* Epistolario de Nueva España, vol. 8, pp. 13–27.

Simpson, Eyler N.

1937. The ejido: Mexico's way out. Univ. N. C. press. Chapel Hill, N. C.

Simpson, Lesley Byrd.

1934. Studies in the administration of the Indians in New Spain. Ibero-Americana, 7. Berkeley.

1938. Studies in the administration of the Indians in New Spain. Ibero-Americana, 13. Berkeley.

Solis y Rivadeneyra, Antonio de.

1704. Historia de la conquista de México, población, y progressos de la América septentrional, conocida por el nombre de Nueva España . . . Nueva ed. . . . aumentada con la vida del autor, que escrivió don Juan de Goyeneche. Imprenta de Antonio Gonçalez de Reyes. Madrid.

Standley, Paul C.

1920–26. Trees and shrubs of Mexico. Contr. U. S. Nat. Herb., vol. 23 (5 parts, pagination continuous).

Starr, Frederick.

1908. In Indian Mexico; a narrative of travel and labor. Forbes & Co. Chicago.

Steggerda, Morris.

1941. Maya Indians of Yucatan. Carnegie Inst. Washington, Publ. 531.

Steward, Julian H., Editor.

1946–50. Handbook of South American Indians. 6 vols. Bur. Amer. Ethnol. Bull. 143.

Stone, Doris Z.

1949. The Boruca of Costa Rica. Pap. Peabody Mus. Amer. Archaeol. and Ethnol., Harvard Univ., vol. 26, pt. 2. Cambridge, Mass.

Stresser-Pean, G. and J.

1940. Mission de mm. G. et J. Stresser-Péan au Mexique (1936–1938). Journ. Soc. Amér. n. s., vol. 32, pp. 275–284.

Suma. *See* Paso y Troncoso.

Papeles de Nueva España, vol. 1.

Tapia, Andres de.

Relación hecha por el señor Andrés de Tapia sobre la conquista de México. *In* García Icazbalceta, vol. 2, pp. 554–594.

Tapia Zenteno, Carlos de.

1767. Noticia de la lengua huasteca, que en beneficio de sus nacionales, de orden del Ilmô. sr. arzopispo [*sic*] de esta Santa Iglesia metropolitana, y a sus expensas, da Carlos de Tapia Zenteno. Imprenta de la Bibliotheca mexicana. [Ciudad de] México.

Tezozomoc, Hernando Alvarado.

1944. Crónica mexicana. Editorial leyenda, S. A. México, D. F.

Torquemada, Juan de.

1943. Monarquía indiana. [Facsimile ed.] Editorial Salvador Chávez Hayhoe. 3 vols. México, D. F.

Toussaint, Manuel.

1948. La conquista de Pánuco. El Colegio nacional. México, D. F.

Velasco, Juan Lopez de. *See* Lopez de Velasco.

Veracruz.

1905. Carta general del estado de Veracruz-Llave; levantada a iniciativa de su actual gobernador, Teodoro A. Dehesa, por la Comisión geográfico-exploradora. Scale, 1: 250,000. N. p. [Cited as: Carta general.]

VERACRUZ—continued
1845. Informe que sobre el estado de la administración pública debió presentar a la Honorable asamblea . . . el gobierno del departamento de Veracruz. 1844. Imprenta de Florencio Aburto. Jalapa [Ver.].
1871. Memoria presentada por el C. gobernador del estado libre y soberano de Veracruz Llave a la H. legislatura del mismo. 1870. Tip. del "progreso" de R. Lainé y ca. [Ciudad de] Veracruz.
1887. Memoria presentada a la Honorable legislatura del estado de Veracruz-Llave por el C. gobernador constitucional, general Juan Enríquez. 1886. Tip. "El gran libro." [Ciudad de] México.
1888. Memoria presentada por el C. gobernador del estado de Veracruz-Llave a la H. legislatura. Tip. literaria de Filomeno Mata. [Ciudad de] México.
1912. Reseña geográfica y estadística. Librería de la Vda. Bouret. París; [Cuidad de] México.

VEYTIA, MARIANO.
1944. Historia antigua de México. Editorial leyenda, S. A. 2 vols. México, D. F.

VILLA ROJAS, ALFONSO.
1945. The Maya of east central Quintana Roo. Carnegie Inst. Washington, Publ. 559.

VILLA-SEÑOR Y SANCHEZ, JOSE ANTONIO DE.
1746–48. Theatro americano; descripción general de los reynos, y provincias de la Nueva-España, y sus jurisdicciones . . . Imprenta de la viuda de D. Joseph Bernardo de Hogal. [Ciudad de] México.

WAUCHOPE, ROBERT.
1938. Modern Maya houses, a study of their archaeological significance. Carnegie Inst. Washington, Publ. 502.

WHETTEN, NATHAN L.
1948. Rural Mexico. Univ. Chicago Press. Chicago.

WHITAKER, THOMAS W.
1948. Lagenaria : a pre-Columbian cultivated plant in the Americas. Southwestern Journ. Anthrop., vol. 4, pp. 49–68.

WHITAKER, THOMAS W., and BIRD, JUNIUS B.
1949. Identification and significance of the cucurbit materials from Huaca Prieta, Peru. Amer. Mus. Nat. Hist., Amer. Mus. Novitates, No. 1426.

ZAVALA, LORENZO DE.
1918. Ensayo histórico de las revoluciones de México, desde 1808 hasta 1830. 3 ed. Precedida de un estudio biográfico del autor por Alfonso Toro y con notas del mismo, aclarando y rectificando algunos hechos. Ofic. impresora de hacienda, Dp. editorial. 2 vols. México, D. F.

# EXPLANATION OF PLATES

PLATE 1

Landscape. *a*, View of Tajín, from northwest of main pyramid; note rolling country and dense vegetation. *b*, View along main Papantla-Tajín trail.

PLATE 2

Landscape. *a*, View looking northeast from main trail at it passes parcel No. 161 (map 6). *b*, Narrow trail leading to cane and maize fields, vicinity of parcel No. 176. *c*, Main Papantla-Tajín trail. *d*, Wedding party travels west on trail as it passes parcel No. 116 (map 6). *e*, The Arroyo de Ortiga traverses the *fundo legal.*

PLATE 3

The *fundo legal* of Tajín. *a*, Approaching the plaza from the east, on Avenida 16 de septiembre. On the right is a plank structure (pl. 9, *f;* map 7, lot 11, house *b*); in the middle background, the old municipal building (map 7, *A*); and behind it, partially visible, a mud-plastered structure (map 7, lot 2, house *b*), now rented as a municipal office. *b–d*, Clearing the plaza through communal labor; *b*, On the right is house *a*, of lot 21, map 7; *c*, In the background is the dwelling which stands on lot 5, map 7. Behind the men on the right is the broad clearing which runs north, to the archeological zone. *d*, In the middle background is the old municipal building (map 7, *A*). *e*, The new masonry school (map 7, *B*) viewed from the southwest. *f*. View across the plaza. On the left is a corner of the school; on the right, a corner of the old municipal building; in the background are *a* and *b* of lot 4, map 7.

PLATE 4

Water supply; apiculture. *a*, In the middle ground is an excavation in the bank of the Arroyo de Ortiga, along its course through the *fundo legal.* Water filters into the cavity, from which it is drawn for drinking and general kitchen utility. *b*, *c*, House with hives of native bee hung on east wall; note that one hive is a clay pot; the others, lengths of bamboo. *d*, Pottery hives for native bee sit on a rack against north wall of house. *e*, The Old World bee is kept in commercial wooden boxes. *f*, Pottery hives for native bee rest on a support which raises them a few inches above the ground.

PLATE 5

Preparing the milpa. *a*, View after the light undergrowth has been cut with a machete (see pl. 6 for subsequent clearing). *b–d*, Views after the vegetation has been burned, preparatory to planting. *d*, A particularly unsuccessful burn; the field will have to be "swept" (p. 109).

PLATE 6

Preparing the milpa. The light undergrowth has been removed, previously (see pl. 5, *a*) and the heavier vegetation now is being cut; note that in *b* an ax is being used.

PLATE 7

Maize fields. *a*, *b*, The fields are literally carved out of the forest. *c*, *d*, Young maize plants occur in the same field, cheek by jowl with dry stalks, which still bear unharvested ears. *e*, Milpa, with banana trees. Since this field lies along a trail, a simple fence has been built to protect it from passing stock.

PLATE 8

Vanilla pollination; sugarcane processing. *a*, Pollinating the vanilla blossom. *b*, Metal mill for crushing cane. *c*, *d*, Wooden mills for crushing cane. *e*, *f*. "Ovens" for boiling cane juice. In *f*, the "oven" is in operation; note the loop handle of the copper cauldron which has been set in the upper cavity of the "oven."

PLATE 9

House types. *a*, *b*, *e*, Native type, thatched roof, walls of upright poles (*a*, *b*) or of poles and bamboo (*e*); *e*, with lean-to addition. *c*, *f*, Houses with tiled roof, plank walls; in the foreground of *c*, at the far right, is a mud-plastered wall. *d*, House with tiled roof, bamboo walls; the non-Totonac equipment visible through the doorway is ours. *a*, parcel No. 133 (map 8); *b*, parcel No. 115 (map 8). *c*, foreground, house *a*, lot 21 (map 7); background, house *b*, lot 11 (map 7). *d*, house *a*, lot 29 (map 7); *e*, parcel No. 89 (map 8). *f*, close-up of house seen in background of *c*; at the right side of *f*, the Avenida 16 de septiembre enters the plaza of the *fundo legal.*

PLATE 10

House construction. *a*, *b*, The posts, beams, and basic roof frame have been lashed in place. *c*, A supplementary beam (*carga-zacate*) is hoisted to position, on the outside of the mother beam and resting on top of the butts of the roof poles and scissors (see *f* for subsequent step). *d*, Interior view of the frame. *e*, Withes have been tied on the long sheds of the roof, but their ends extend free. At the tip of the gable, a few have been doubled across the short shed; this operation is continued in plate 11 *a*. *f*, The same supplementary beam shown in *c* is being lashed in place. In this house, roof scissors alternate with simple roof poles; note longitudinal reinforcements and transverse struts of the roof frame.

PLATE 11

House construction. *a*, Tying the roof withes across the short shed. *b*, Interior view of roof thatched with bundles of grass. *c*, Interior view of roof thatched with *palma redonda*. *d*, *f*, Reroofing with *misanteca*. *e*, Interior view of a house with tiled roof, bamboo walls. *g*, Thatching a granary roof with *palma redonda*.

PLATE 12

House views. *a–c*. Doors of split bamboo. *a*, *b*, Exterior views; *c*, interior. *a* lacks the upper finish, which usually consists of a half bamboo, in which the uprights are set; it has the transverse poles on the exterior, whereas *b* and *c* have them on the interior. *c* shows the stone on which the door pivots, as well as the diagonal looping of liana on the interior. *d*, Recently repaired roof of *palma redonda*.

PLATE 13

House views. *a*, Kitchen interior, showing grinding table and 3 metates, the rear foot of each resting in the cavity of an upright bamboo. Note oddments hung from poles which form the wall. At the far right, a large jar rests on inverted pots. Its mouth is covered by a cloth; presumably it contains maize gruel which is being fermented. *b*, Water storage. One clay jar visible within the fenced enclosure; others embedded in the heap of ash visible in the middle ground (*b* of map 9). *c*, Characteristic manner of stacking firewood. *d*, Frame, supported by forked sticks, against outside of kitchen wall. On the right, a pottery "dishpan" sits on a similar forked frame; in the foreground are three inverted pots which function as firedogs when cooking is done outdoors.

PLATE 14

Houses and furnishings. *a*, *d*, Kitchen hearths. *a* rests on a forked post frame and has a raised, U-shaped ridge (*hornilla*) on the upper surface. *b* consists of an enclosure of upright bamboos, built in one corner of the room and filled solidly with earth and stone. At the rear of both photographs, a clay griddle is stood on edge, against the kitchen wall. In *d*, a raceme of bananas is dimly visible, hung above the hearth. *b*, Child sitting on a low chair, with woven palm seat, slat back. *c*, Child sitting on a miniature, one-piece stool, with handle. *e*, Splitting bamboos to make the "springs" for a platform bed. *f*. Child resting on typical bench.

PLATE 15

Domestic altars. *a*, Religious singers chanting in front of the shrine, which has been decorated for the observances which take place the eightieth day following the death of an individual. *b*, An altar not decorated for any special occasion. The images are housed in typical shadow-boxes. On each side of the shrine, motion picture posters are hung on the wall.

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PLATE 16

Sweathouses. *a*, *b*, *d*, *f*, Superficial structures. *e*, Subterranean sweathouse. *c*, Interior view of a sweathouse in disrepair. Note the raised floor, stone hearth at rear, water jar, and two half-calabash shells.

PLATE 17

Supplementary domestic structures. *a*, *b*, Poultry houses; *a*, the more characteristic. *c*, *d*, *f*, Granaries; *c*, *f*, separate structures; *d*, inside the kitchen. *e*, Hog shelter.

PLATE 18

Laundry facilities; fences. *a*, Laundry table, with gable-roof shelter. *b*, *c*, Laundry spread to dry; a cropped *chote* tree (Appendix C, No. 10) generally serves in lieu of a clothesline. *d*, Laundry tables; note oval wooden trays. In the center ground a heap of ash obscures view of water jars. *e*, Laundry table, sheltered by triangular thatched roof (map 9, *a*). The water supply is within the fenced enclosure immediately behind the stand on which the oval tray rests. *f*, *g*, Fences; *f*, of rails; *g*, of split bamboo.

PLATE 19

Fiesta cooking. *a*, Girls arrive at the kitchen door, bringing additional supply of water. At lower right, two large clay pots rest on firedogs. At the extreme left, a basin sits in the crotch of a forked stick; it contains water for washing the hands. *b*, Outdoor "kitchen"; note the inverted pots which function as firedogs.

PLATE 20

Fiesta cooking. *a*, Chocolate is beaten with a home-made apparatus (fig. 29, *a*). *b–d*, General views; note the inverted pots which function as firedogs and the profusion of pottery vessels scattered on the ground (*b*, *d*).

PLATE 21

Wooden trays; calabash shells. *a*, *a′*, *b*, *b′*, Wooden trays, presumably of local manufacture. *a*, *a′*, red background, with polychrome overpaint; light wash of cream on interior wall. Painter unknown; rim diameter, 50 cm. *b*, *b′*, orange background, with polychrome overpaint; painted by Luciano Cano, Papantla; rim diameter, 45.5 cm. *c*, *d*, Decorated calabash shells. *c*, allover coating of cheap, red, oil paint; exterior design in polychrome. Painted by Luciano Cano, Papantla; rim diameter, ca. 17 cm. *d*, red lacquer, with polychrome motifs on interior and exterior. Purchased in Papantla market; vendor declared specimen to be "from the state of Puebla" (*sic*); rim diameter, ca. 17.5 cm.

PLATE 22

Wooden masks; baskets; hanging frame. *a*, *c*, *e*, Masks. *a*, Model mask for clown (*pilatos*) (*sic*) "of any dance group." Made by Donato Santes, Tajín, height,

29 cm. *c*, Mask for chief dancer of Negritos; used by dance group in Gildardo Muñoz. Maker unknown; height, 16.5 cm. *e*, Mask for clown of Negritos; used by dance group in Gildardo Muñoz. Maker unknown; height, 17.5 cm. *b*, *f*, Baskets. *b*, Wicker basket, made by Pascual Santes, Tajín; diameter, ca, 37 cm. *f*, Wicker basket strainer, made by Modesto González, Tajín; diameter, 20–22 cm. *d*, Hanging frame for food storage; made by Guadalupe de Luna, of San Miguel Pericos; diameter, 46–48 cm.

PLATE 23

Wooden puppet (*a–c*) used in course of Christmas festivities. Maker unknown; height, 72 cm.

PLATE 24

Pottery making. Various steps in making a jar. *a*, The clay is worked between the hands to form a roll. *b*, The roll is placed in a half circle, on a banana leaf, which is spread on top of a box; the original half circle has been completed by a second roll, and a third half circle placed on top. *c*, There is a total of three circles (each composed of two rolls of clay), one on top of the other. *d*, Coils have been obliterated through upward stroking, and the cylinder now stands about 35 cm. tall. *e*, With a corncob, the upper walls of the cylinder are stroked upward, to form the rim of the jar. *f*, The walls are scraped and smoothed. *g*, The belly of the vessel is expanded. *h*, In the right foreground, a jar has dried sufficiently to be stood on its rim, and the moist clay of the base stroked to close the aperture. This operation has not yet been completed. On the floor are scattered castor leaves, which have been wrapped about the base, to keep the clay damp, while the remainder of the vessel dried.

PLATE 25

Pottery making. *a–d*, Bowls. *e–g*, Baking plate. *a*, Two clay circles are superimposed. *b*, The coils are obliterated on the interior. *c*, The upper edge is wiped with the moistened hand to form the rim of the vessel. *d*, The base has been added and the surface of the bowl is being smoothed with the hand, which has been dipped in water. *e*, The baking plate usually is formed on the base of an inverted wooden tray. *f*, In this case, the griddle is made on a flat board; the upper surface of the plate is being smoothed with the hand. *g*, A griddle is being fired; note the radial disposition of the fuel. Ash has been placed on the upper surface of the plate, to prevent breakage.

PLATE 26

Braiding; palm ornaments. *a*, Making a seven-strand braid of *jonote* bark. *b*, Palm stars used in cemetery decoration; the grave is strewn with clay incense burners. *c–e*, Palm stars used as altar ornament. *f*, Canopy made of four leaves of *palma real;* the segments of the lower half of each leaf have been woven to form a selvage. Woven palm stars are affixed as ornament (cf. pl. 27, *d*).

PLATE 27

Woven palm ornaments. *a*, *b*, Stars. *c*, Star variant. *d*, Star affixed with wooden skewer to palm canopy; cf. pl. 26, *f*. *e*, Pineapple. *f*, Sun or sacrament. *g*, Basket or gourd.

PLATE 28

Spinning and weaving. *a*, *c*, Spinning. *b*, *f*, Winding the spun thread on the spindle. *d*, Wrapping the heddle; ordinarily, one works from left to right, not as shown in the photograph. *e*, Changing the shed. *g*, Warping over three stakes (cf. fig. 55).

PLATE 29

Cotton textiles. All are "old" *manteles;* measurements given below are approximate and do not include fringe. *a*, No. 18; 35 × 40 cm. *b*, No. 16; 58 × 63 cm. *c*, No. 23; 76 × 90 cm. *d*, No. 24; 68 × 69 cm.

PLATE 30

Cotton textiles. Warp threads run lengthwise on the page. *a–g*, to same scale, to demonstrate differences in texture between various products and between "old" and new *manteles*, *a*, Modern strainer (*coladera*), No. 3; approximately 7 warps to each centimeter. *b*, *Ruedo*, No. 8. c–e, "Old" *manteles; c*, No. 16; *d*, No. 20; *e*, No. 19. *f*, *g*, New *manteles; f*, No. 31; *g*, No. 34. *h*. *Ruedo*, No. 8. Two lengths of warp threads, left unwoven above the fringe, are sewn to the fabric to prevent raveling.

PLATE 31

Cotton textiles: fringe. All illustrated specimens are *manteles*. *a*, No. 16; *b*, No. 34; *c*, No. 19; *d*, No. 23; *e*, *f*, No. 18. Knots (p. 235; fig. 62) are as follows: *a*, knot *a; b*, knots *b* and *g; c*, knot *c; d*, knot *d; e*, *f*, knot *g*. Knots *e* and *f* not shown here but appear in figure 62.

PLATE 32

Embroidered skirt; woven belt. *a–d*. Sacklike skirt, embroidered in blue; the type current forty-odd years ago. Made by Luz Valencia, Tajín, who loaned the specimen for photographing. Both sides of the skirt are shown, as well as detail of the embroidery. *e*, *f*. Obverse and reverse of red and white woven sash, purchased in former times from traders from the highlands; precise provenience unknown to informants. No longer available, but a few such belts still are found in Tajín and are worn exclusively by elderly women (pl. 20, *a*).

PLATE 33

Embroidery. *a*, *b*. Border at each end of *ruedo* No. 10. *c–e*, Blouse embroidery; *c*, design darned on a drawnwork foundation. *f*, Candlewick work.

PLATE 1.—**Landscape.**

(For explanation, see p. 362.)

PLATE 2.—**Landscape.**

(For explanation, see p. 362.)

PLATE 3.—**The *fundo legal* of Tajín.**

(For explanation, see p. 362.)

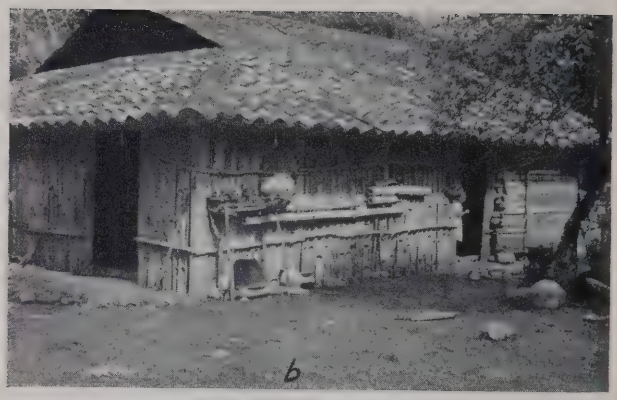


PLATE 4.—**Water supply; apiculture.**

(For explanation, see p. 362.)

PLATE 5.—**Preparing the milpa.**

(For explanation, see p. 362.)

PLATE 6.—**Preparing the milpa.**

(For explanation, see p. 362.)

PLATE 7.—**Maize fields.**

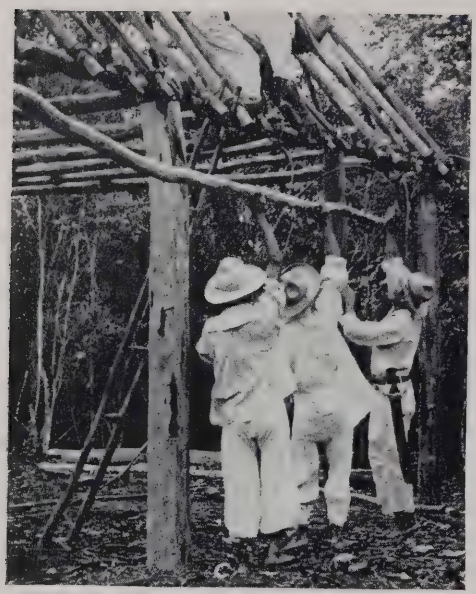
(For explanation, see p. 362.)

PLATE 8.—**Vanilla pollination; sugarcane processing.**

(For explanation, see p. 362.)

PLATE 9.—**House types.**

(For explanation, see p. 362.)



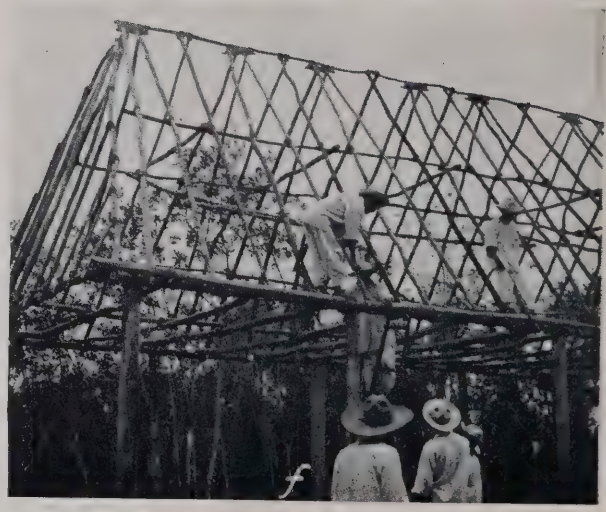



PLATE 10.—**House construction.**

(For explanation, see p. 362.)

PLATE 11.—**House construction.**

(For explanation, see p. 363.)

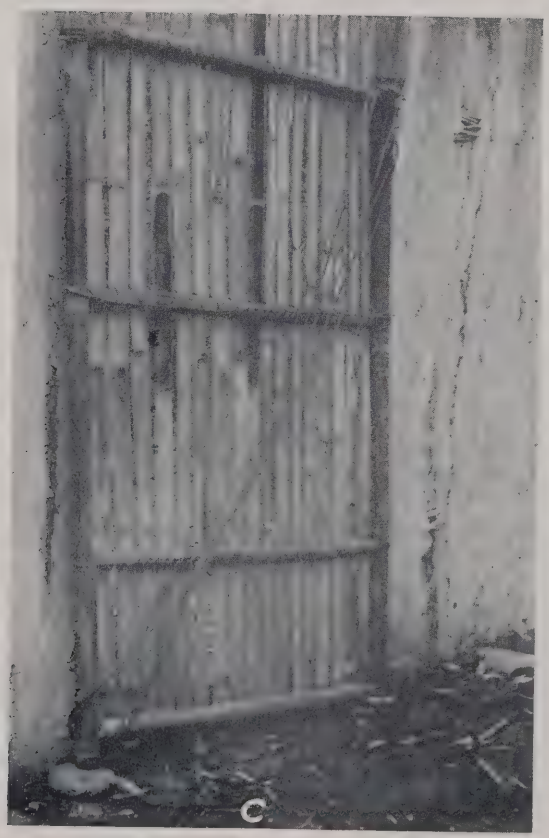


PLATE 12.—**House views.**

(For explanation, see p. 363.)

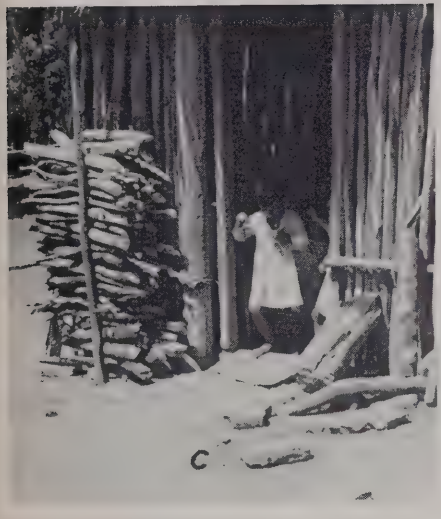


PLATE 13.—**House views.**

(For explanation, see p. 363.)

PLATE 14.—**Houses and furnishings.**

(For explanation, see p. 363.)

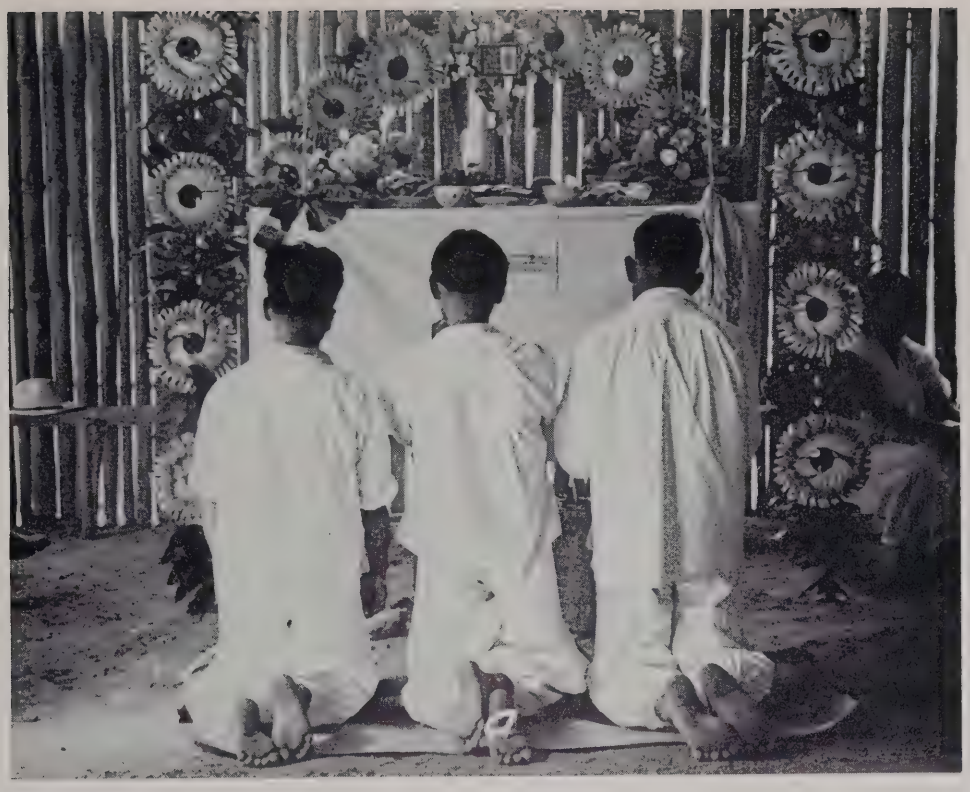


PLATE 15.—**Domestic altars.**

(For explanation, see p. 363.)

PLATE 16.—**Sweathouses.**

(For explanation, see p. 363.)

PLATE 17.—**Supplementary domestic structures.**

(For explanation, see p. 363.)

PLATE 18.—**Laundry facilities; fences.**

(For explanation, see p. 363.)

PLATE 19.—**Fiesta cooking.**

(For explanation, see p. 363.)

PLATE 20.—**Fiesta cooking.**

(For explanation, see p. 363.)

PLATE 21.—**Wooden trays; calabash shells.**

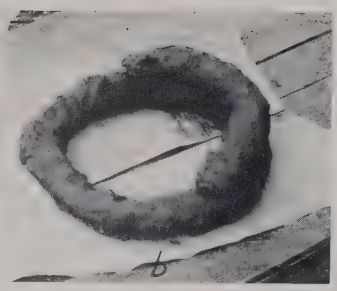
(For explanation, see p. 363.)

PLATE 22.—**Wooden masks; baskets; hanging frame.**

(For explanation, see pp. 363–364.)

PLATE 23.—**Wooden puppet.**

(For explanation, see p. 364.)



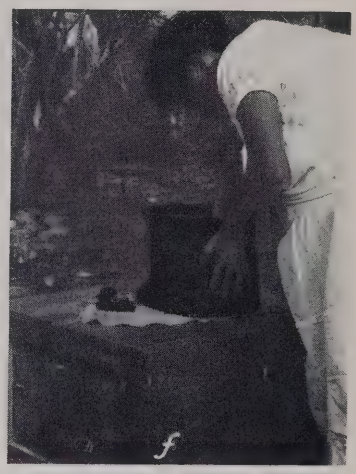
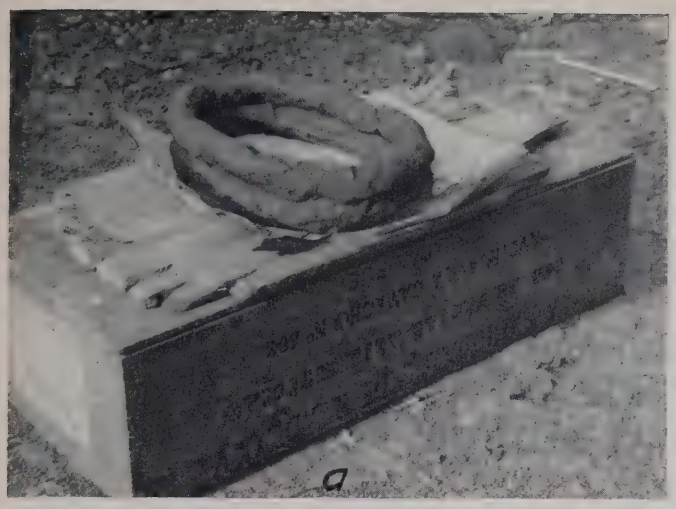


PLATE 24.—**Pottery making.**

(For explanation, see p. 364.)



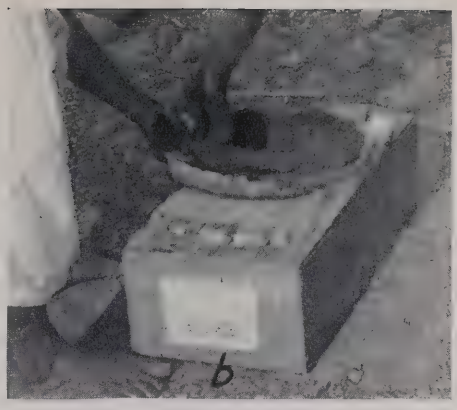
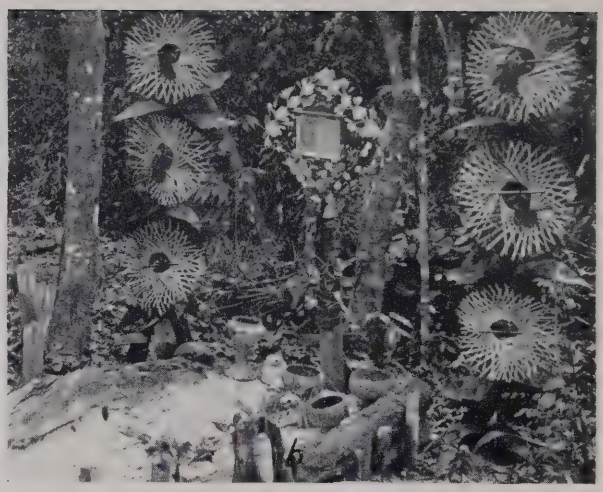
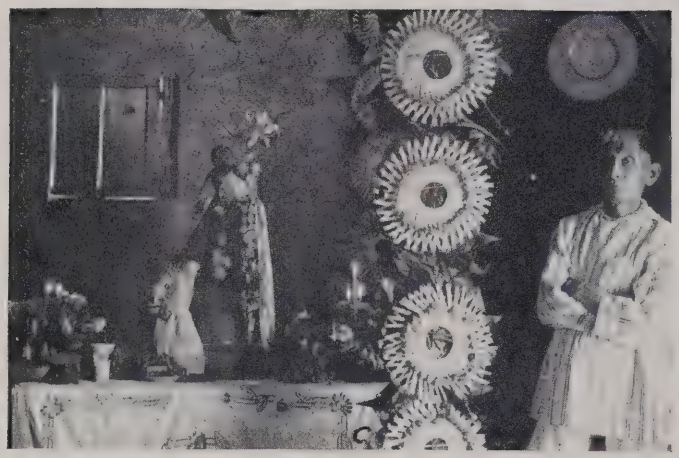
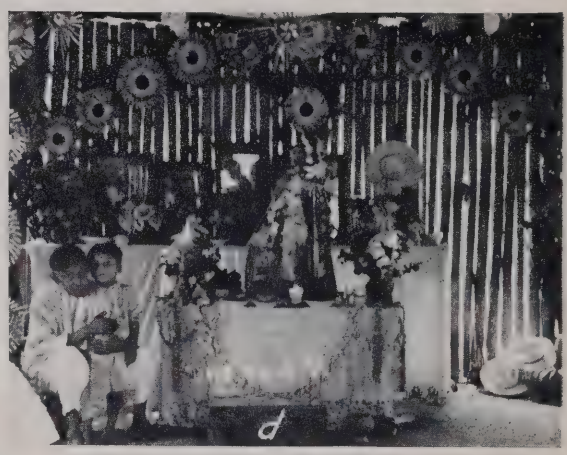



PLATE 25.—**Pottery making.**

(For explanation, see p. 364.)



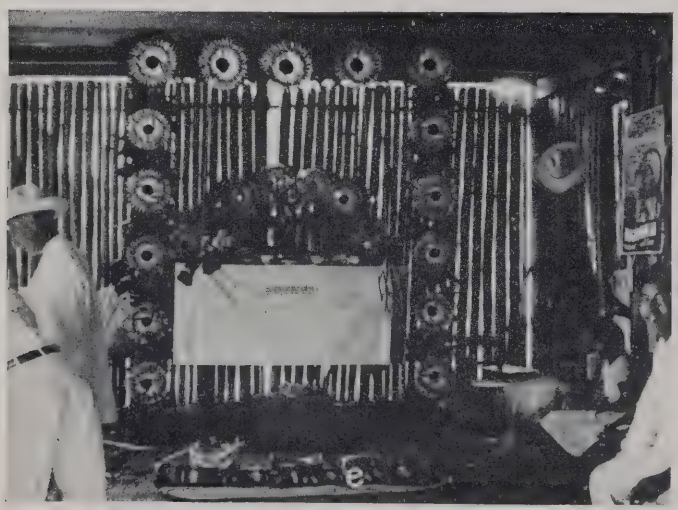



PLATE 26.—**Braiding; palm ornaments.**

(For explanation, see p. 364.)

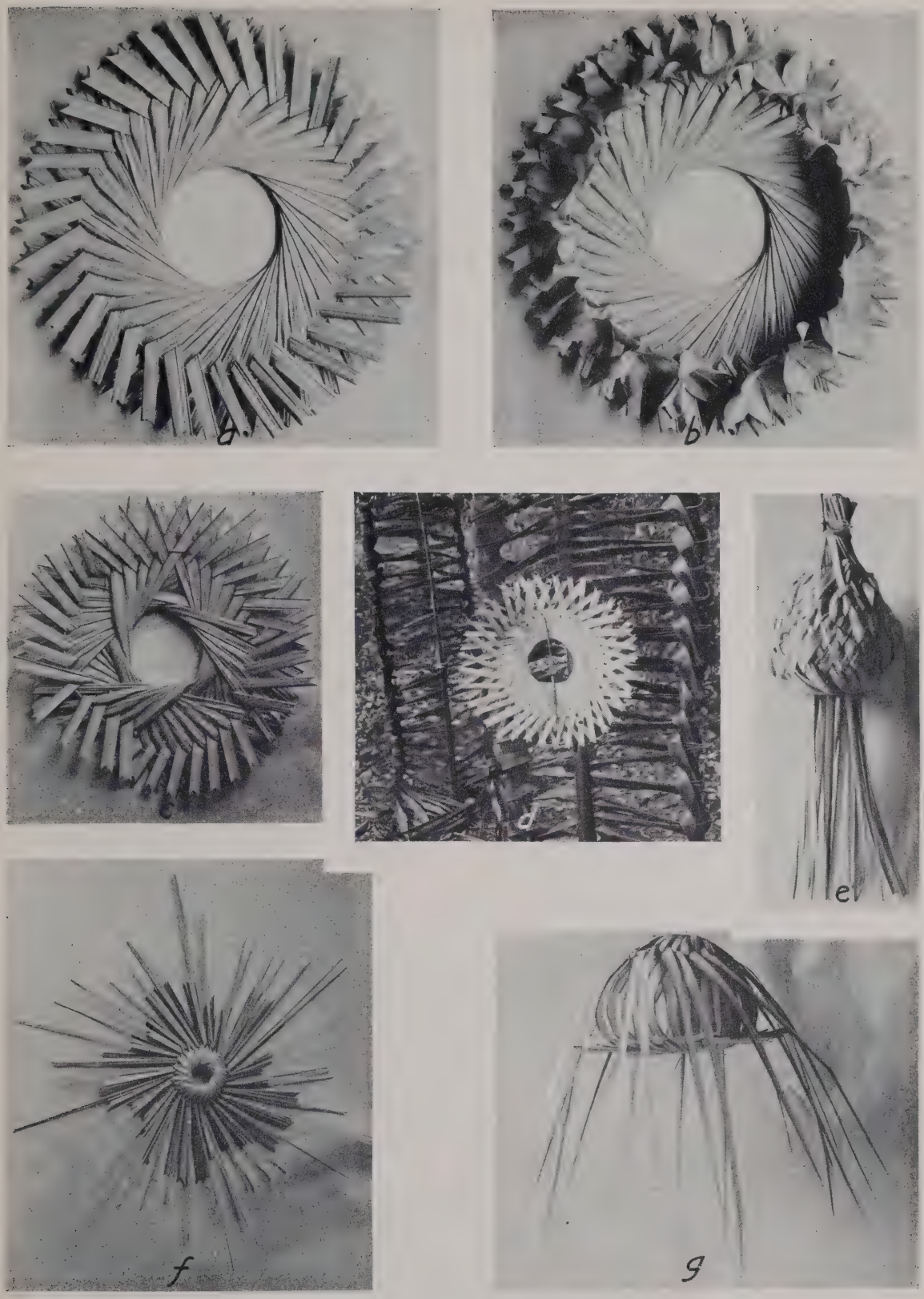
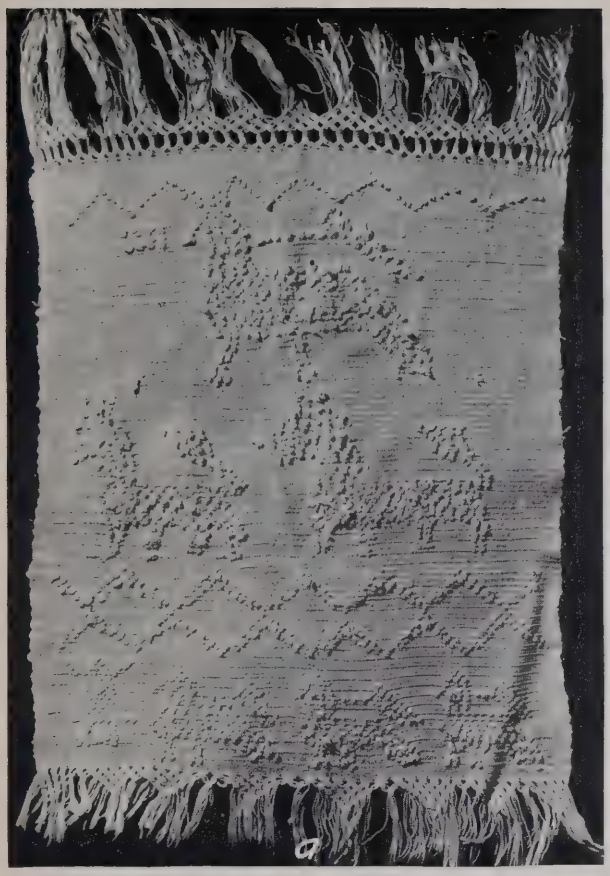


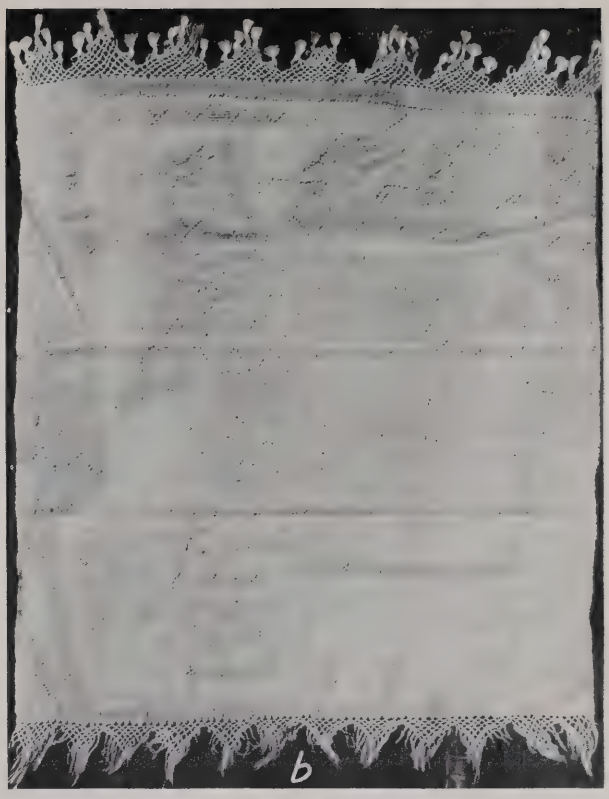

PLATE 27.—**Woven palm ornaments.**

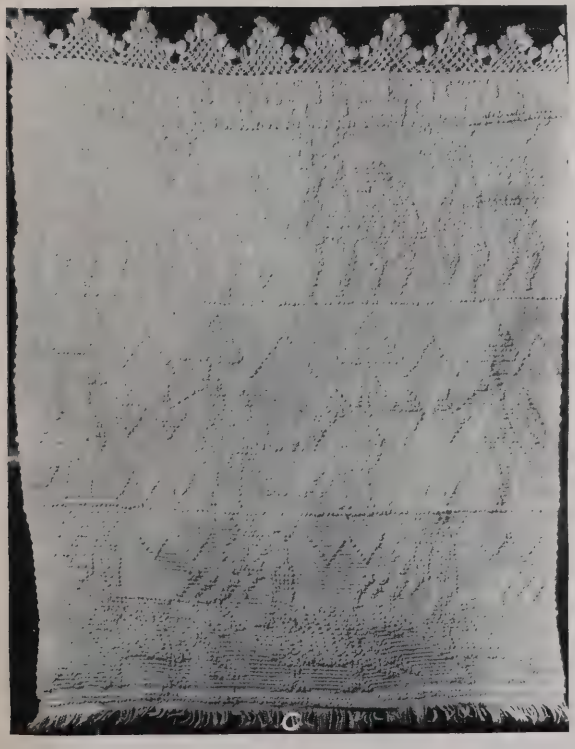
(For explanation, see p. 364.)

PLATE 28.—**Spinning and weaving.**

(For explanation, see p. 364.)



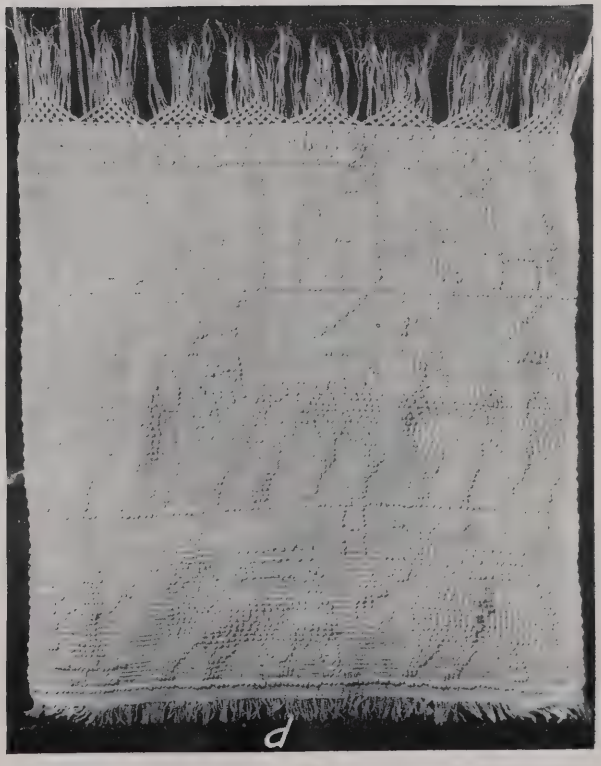




PLATE 29.—**Cotton textiles.**

(For explanation, see p. 364.)

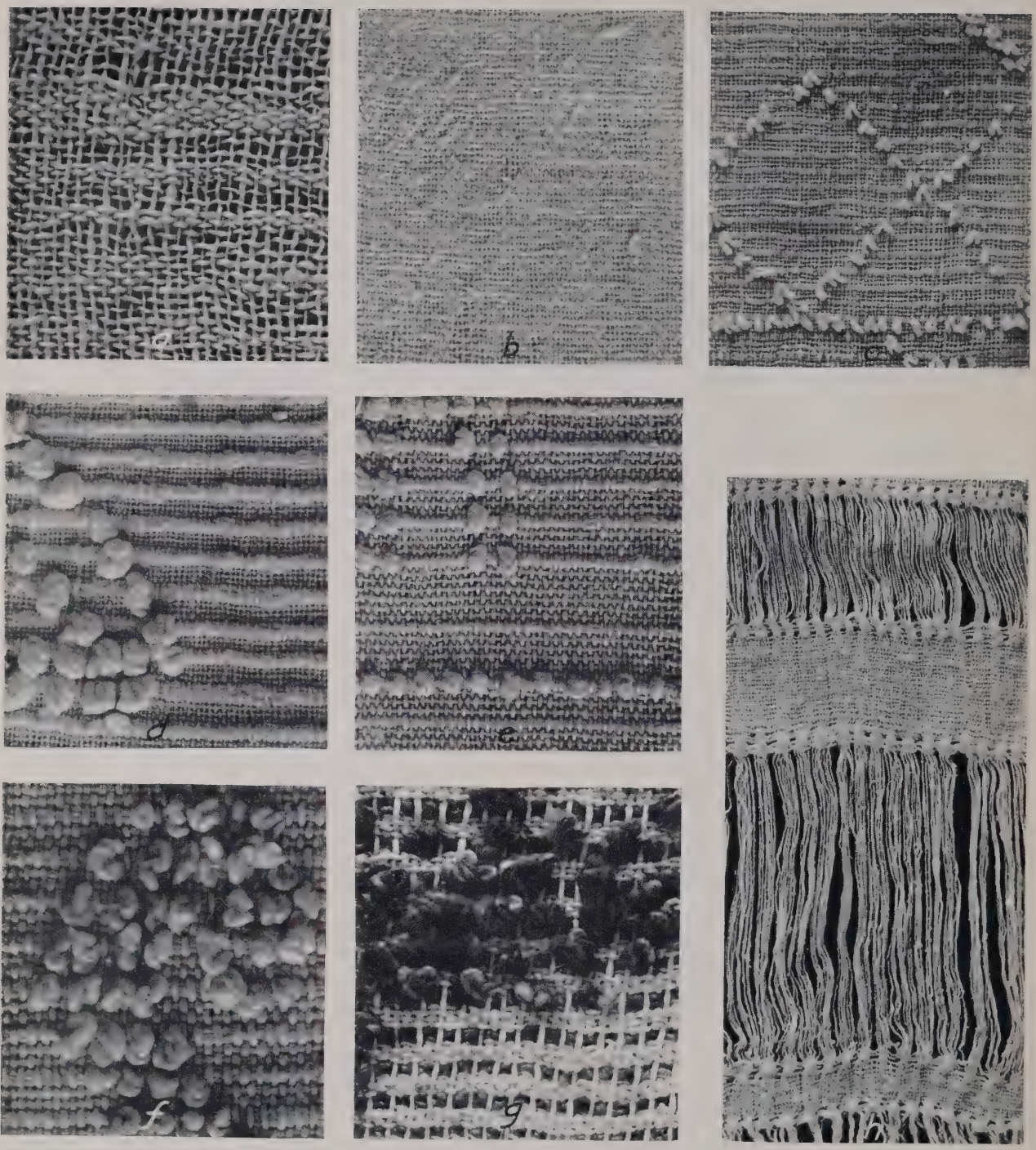
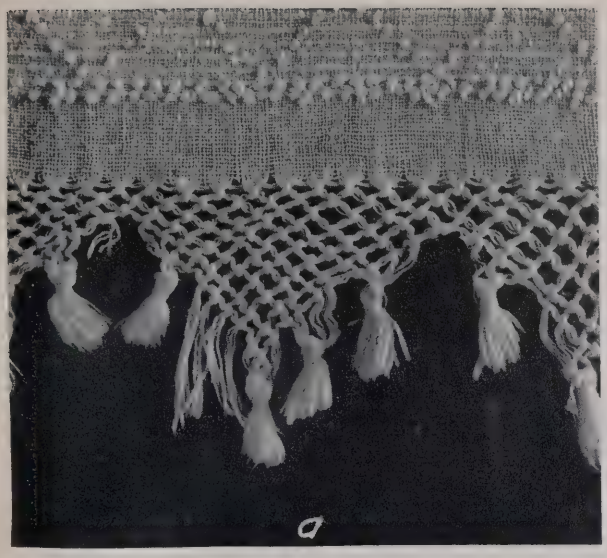
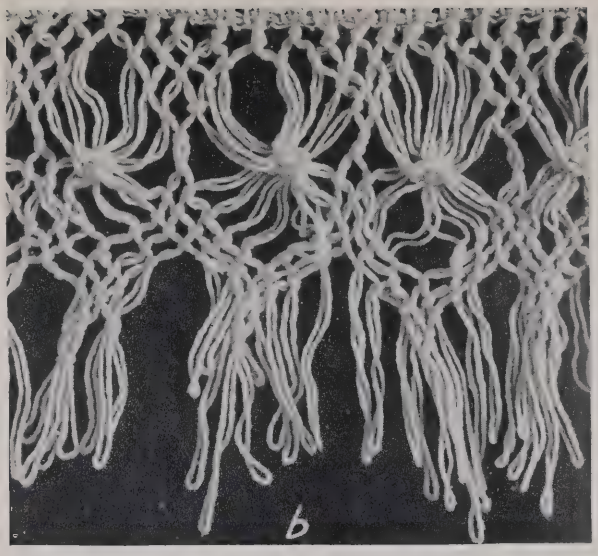
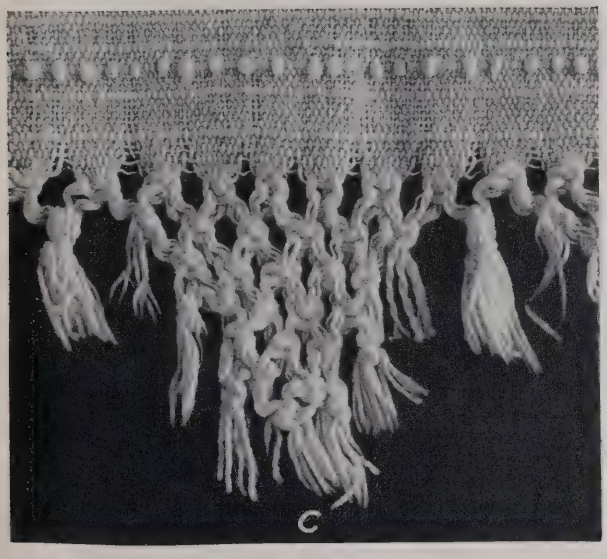


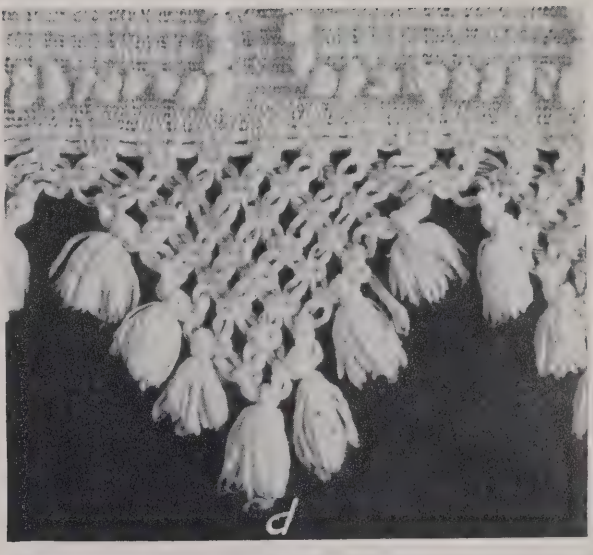

PLATE 30.—**Cotton textiles.**

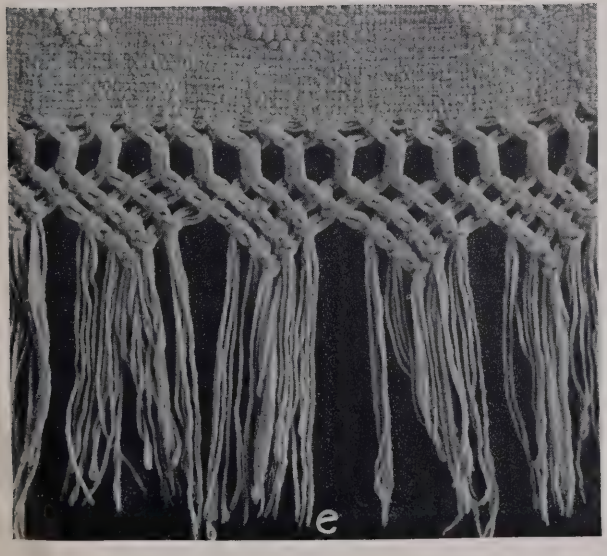
(For explanation, see p. 364.)



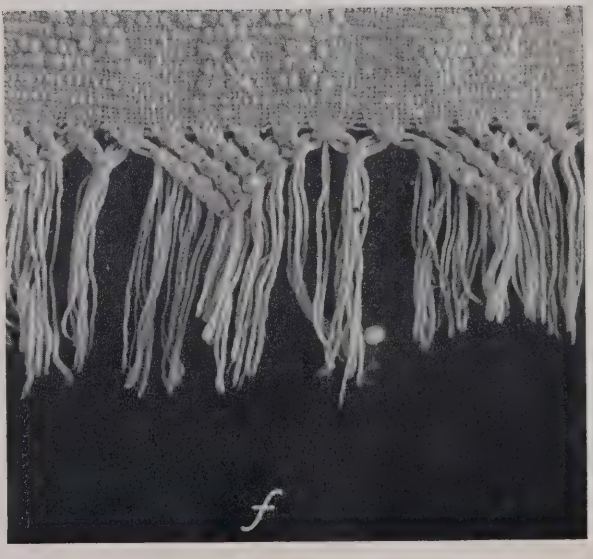




PLATE 31.—**Cotton textiles; fringe.**

(For explanation, see p. 364.)

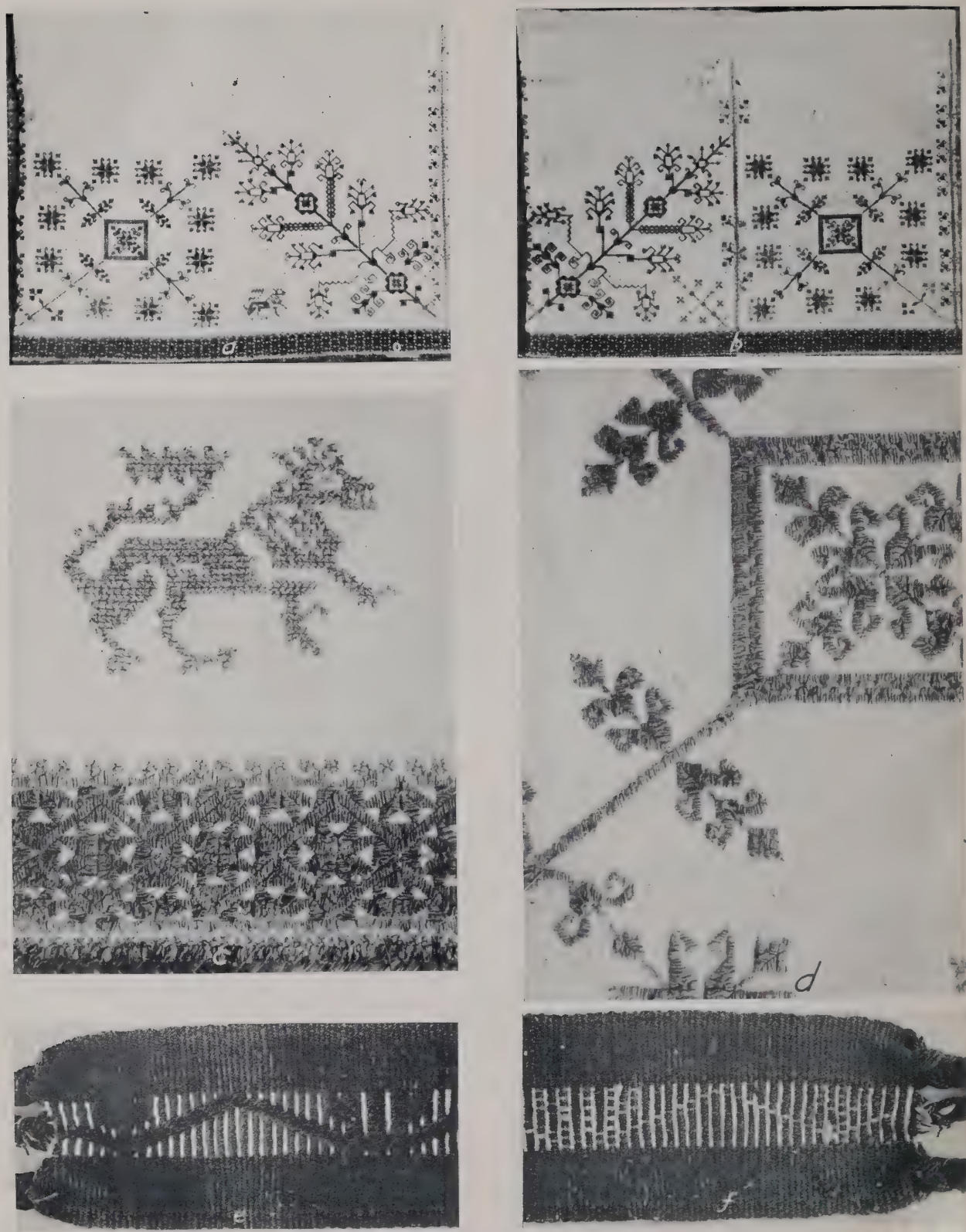
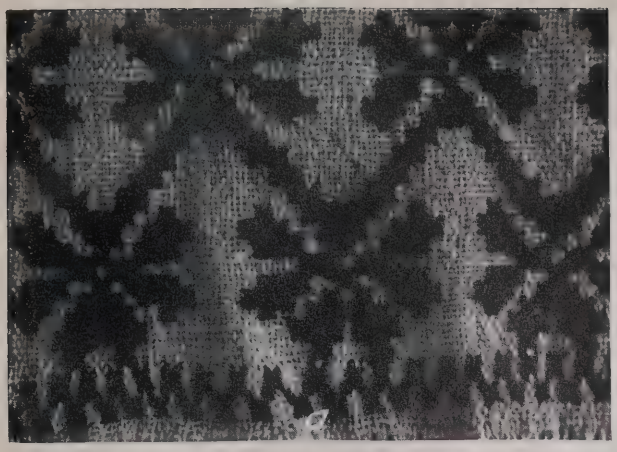
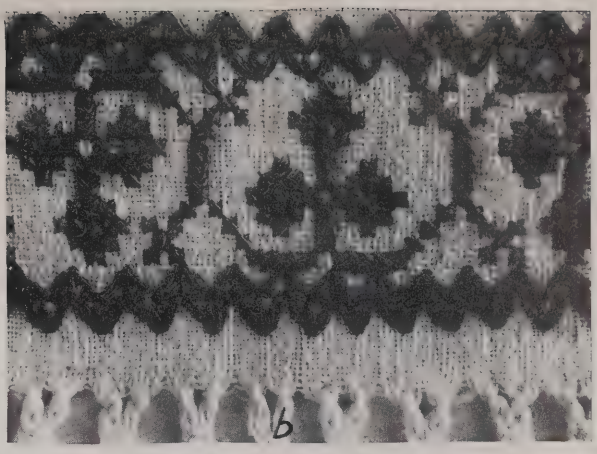
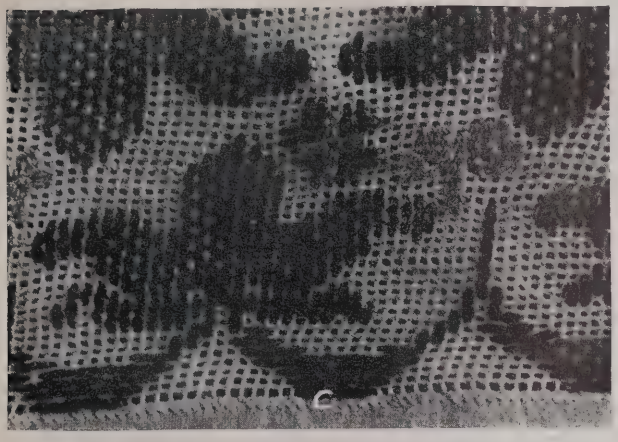



PLATE 32.—**Embroidered skirt; woven belt.**

(For explanation, see p. 364.)



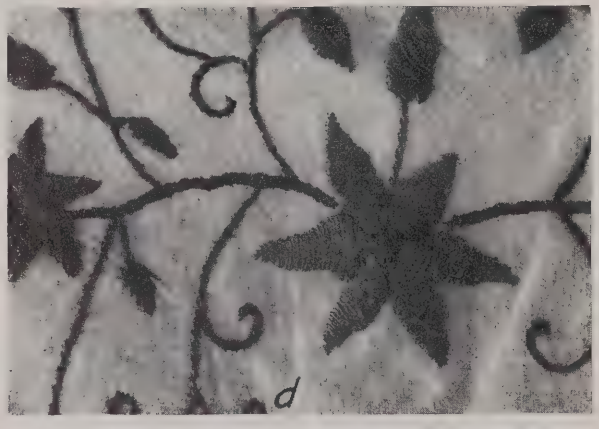



PLATE 33.—**Embroidery.**

(For explanation, see p. 364.)

# INDEX

This index is by no means complete; it merely covers the main text and Appendix B in somewhat greater detail than does the table of contents. As a rule, it does not include material which appears in the tables. It is assumed, for example, that anyone who is particularly interested in the Mexican conquests will make direct use of the tables of Appendix B.

Appendix A does not lend itself to indexing, unless the names of all pueblos (tables 14, 15) and *encomenderos* (table 14) be included. Anyone interested in this rather special aspect of the study will find the pueblos in alphabetical order in table 14; in table 15, order is numerical, to agree with the entries on map 2.

An index to the genera of the herbarium specimens appears (pp. 341–346) at the end of Appendix C. Items of general interest in that Appendix and in Appendix D are referred to in the text, either of this volume or of Part 2, which is not yet published. Accordingly, detailed indexing of these two appendices would be essentially a duplication.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